CULTURE CONTACT AND SOCIAL CHANGE ALONG CHINA'S ANCIENT SOUTHWESTERN FRONTIER, 900 B.C.–100 A.D.

by

Alice Yao

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Doctoral Committee:

Professor John M. O'Shea, Co-Chair
Professor Carla M. Sinopoli, Co-Chair
Professor Miranda D. Brown
Professor Henry T. Wright

To my parents (Tuan-tuan and Peter)

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Chapter 1
Introduction

During the Han Dynasty (202 BC – AD 220), the Chinese state underwent a period of great territorial expansion, incorporating culturally distinctive regions from Korea to Vietnam. In this evolving context of cultural contact and imperial expansion, the Chinese came to define foreign groups according to perceived differences in subsistence, dress, customs, and political leadership (Yu 1967; Wang 1989; Allard 1998; Di Cosmo 2002). Far from being simple descriptions of foreign peoples, these accounts reflect an imperial valuation system defined by cultural distance from Han norms. This imperial ideology provided a systemized framework from which to pursue imperial expansion. Groups whose customs more closely resembled Han norms were considered suitable to imperial incorporation. According to the Han view, the pacification of 'barbarians' was not subjugation achieved merely by force alone, but also by their willingness to become 'Chinese' through adopting the values and practices of civilization.

Scholarly examination of Han imperial conquest and assimilation, drawing from Han written sources, has resulted in a limited view of the lengthy process of cultural interaction and change between the Han and peripheral communities. Thus, scholars have argued that Han influence can be confirmed by identifying correlations between, for example, accounts about Korea and Southeast Asia and finds of Chinese goods in those respective regions (Pai 1992; c.f. Barnes 1999). Implicit in this perspective is that the singular event of conquest resulted in dramatic change – the introduction of Chinese culture to a conquered region.

In limiting culture contact to a moment of conquest, past approaches have simplified the dynamic process of cross-cultural interactions (Silliman 2005). This approach overlooks the variable forms of cultural interactions on the boundaries of empires, which can range from limited exchanges and diplomacy, to more forceful military encounters and subjugation (Sinopoli 1994; Lightfoot and Martinez1995; Cusick

et al 1998; Alcock et al. 2001). In many historic empires, multiple modes of cultural interaction likely preceded colonization and the interaction involved societies ranging widely in their sociopolitical complexity (e.g. Roymans 1999; Wells 1999; Woolf 2001). Thus, a multivariant approach that expresses the processes found in culturally and temporally specific contexts can provide more powerful understandings of the kinds of structural transformations that occur in contact situations and of the internal mechanisms involved in social change. To explore such issues, it is imperative to identify the cultural practices of indigenous peoples prior to encounter as a means to evaluate the aftermath.

CASE STUDY

This research utilizes mortuary data from two cemetery sites to investigate the long term trajectory of cross-cultural interaction in the Qujing region, in the southwestern province of Yunnan, China. This region was of considerable interest to ancient Chinese states due to its strategic location on communication routes to the west and as an area of riverine marshes good for paddy rice cultivation in this otherwise rugged and mountainous region. The few textual references from the Han (206 B.C.) to Shu-Han (347 A.D.) periods suggest that the area had been in contact with the Chinese sphere by the Qin period (221-207 BC: Sun and Xiong 1983:244). From about 133 BC, texts record the growing Han expansion into the southwest and the subsequent conquest of various frontier groups ranging from loosely integrated tribal groups to more politically advanced polities such as the Dian. By 109 BC, the *Shiji* records that the Han successfully subjugated the groups in northeastern Yunnan and the Dian Kingdom, incorporating the entire region into the Yi Commandery. Han administration over the region was nevertheless problematic, as documented by seven successive uprisings from 105 BC to AD 176 and the persistence of numerous local customs even after 200 hundred years of Han rule (Allard 1998). This brief description of the southwestern frontier indicates a dynamic process of interaction between the Chinese and local populations.

To understand this process, my research seeks to build a microhistory of the long-term trends in cultural interaction that explores how indigenous structures developed in response to foreign social and political institutions. I address this problem through a study of the mortuary practices and material consumption patterns spanning the pre-

contact to post-conquest period from the Qujing region in Yunnan. The archaeological materials from Qujing span the continuous history of an indigenous group from the pre-contact to the post-conquest period. The richness of this diachronic record affords the opportunity to examine how diversity in indigenous social organizations contributed to different modes of cultural interaction with the Chinese sphere, and defined the trajectory of cultural change following colonization. This case presents an instance in which the process of interaction with an imperial state did not lead to direct incorporation and assimilation but, possibly, the persistence or alteration of local organizational forms. Simultaneously, this detailed view from the periphery may refract an alternate image of Han imperialism that contrasts against a textually filtered lens.

ORGANIZATION OF VOLUME

Chapter 2 presents the development of culture contact studies in Anthropology beginning with early formulations of acculturation studies to post-colonial contributions from the fields of history and cultural studies. The ontological discussion is intended to broaden the culture change discourse to reconcile the different forms of intercultural interaction ranging from less direct (trade) to more intensive (imperialism). The forms of cultural change are presented as a range of conceptual possibilities depending on the nature of interaction. Following this discussion, I present an explanatory framework that evaluates the emergence of these distinctive forms of culture change.

Chapter 3 attempts to conceptualize the nature or terms of cross-cultural engagement between the Southwestern tribes and Central Plains culture by drawing on Han textual sources. To understand the nature of cross-cultural engagement between this region and Central Plains states, I present an overview of Han attitudes and perceptions of different peripheral polities and attempt to contextualize the Qujing region within this wider scope. I then provide the textual and "ethnographic" account of the tribal groups represented by the archaeological cultures in the Qujing region. The archaeological markers of local versus foreign identities are then contrasted against the textual references to underline the problem of defining culture change and imperialism.

Chapter 4 presents the theoretical and methodological basis of mortuary analysis. Unlike the traces of daily activity typically recovered by archaeologists, mortuary ritual is

a social context in which cultural intentions directly (re)produce meaningful actions. Thus, mortuary analysis requires its own logical basis for social inference and explanation. I outline the procedural steps adopted for the reconstruction of social practices at each cemetery site. Then, I present a framework based on consumption patterns in the material culture to model the nature of change at the diachronic scale.

Chapter 5 provides an overview to the archaeological investigations of the prehistoric- early historic period in the Qujing region. In addition to providing the chronological background, the chapter discusses the geographic and spatial variations within the region. A comparison of site location distributions between periods provides understanding of the economic and political variables contributing to the settlement pattern. This spatio-temporal framework is important to specifying possible intraregional associations between the three sites.

Chapter 6 presents the coding and classification of the material culture from the three sites. The goals of this chapter are not only to establish the basic units of analysis girding the mortuary analyses but to present a standardized data set conducive to the comparative evaluation of these three sites. In line with the previous chapter, the orientation of this chapter attempts to integrate the two sites within a regional framework to discern political and economic linkages.

Chapter 7 and 8 investigates the synchronic and diachronic patterns of mortuary ritual at the respective cemetery mounds of Batatai and Hengdalu cemetery mound. Each chapter first defines the chronological phases of each mound before describing the structure of the mortuary ritual in each phase. Finally, I compare trends between the phases to identify divergences in the mortuary ritual and discuss those transitions suggestive of cultural change.

Chapter 9 presents a synthesis of the findings from the two sites. I compare the range of transformations at the sites and place these observations against the backdrop of culture change presented in chapter 2. By placing the two sites in a comparative regional context, inter-site divergences allude to the implications that internal social organization have for determining the structure of culture change. More specifically, the patterns contrasting the two communities indicate that culture change is not a unitary phenomenon but dependent on the intersection of different individual and group positions within the

nexus of the provincial system. These findings explicate the fundamental social structures and mechanisms of cultural transformation and by extension, help refine our knowledge about Han imperial engagement.

Chapter 2
The Anthropology of Culture Contact

> Although the ultimately exploitative character of the global economy can hardly be overlooked, an analysis which makes dominance and extraction central to intersocietal exchange from its beginnings will frequently misconstrue power relations which did not, in fact, initially entail the subordination of native peoples. (Thomas 1992:83-84)

The study of contact between expansionary states and their neighbors has been a fundamental issue in anthropology since the early 20th century. Since much of early anthropology emerged in conjunction with western colonial expansion, models of culture contact developed in an attempt to examine the incorporation of new territories and cultures into colonial frameworks (Rogers and Wilson 1993). These approaches explained how assimilation and acculturation operated as the primary mechanism of change, leading to the colonized group's adoption of the dominant state's cultural institutions. This conceptual orientation is premised on "the West's very definition of itself as a distinct entity" and of a simultaneously different cultural other (Stein 2005:24). However, intercultural interactions do not always lead to ruptures and the ineluctable loss of native cultures, as Thomas notes in the above quote. Other modes of exchange likely precede imperial and colonial incorporation and cross-cultural interaction itself does not necessarily presage conquest. All of this begs us to think more substantively about what constitutes culture change in contexts where members of different cultures come into contact.

This chapter attempts to shed some of the intellectual baggage associated with the anthropology's entanglement with Western colonialism. I present a conceptual framework for the study of culture contact and change that accounts for variability in social outcomes. More specifically, I provide an approach to model change that addresses the possibility of integration, persistence, and resistance. I first present an overview of the different historical models and discuss their criticisms. I then offer a

different conceptual framework to consider alternative trajectories of social change under conditions of cross-cultural interaction.

THEORETICAL APPROACHES TO CULTURE CONTACT AND CHANGE

Acculturation theory

Early anthropological approaches to culture contact emphasized the asymmetrical nature of the interaction between a larger, more complex society and a smaller, simpler society. Anthropological research among Native American groups in North America led to the development of *Acculturation Theory* to explain the conditions and rules under which a 'recipient' group adopted the cultural values of a 'donor group' (Broom et al. 1954; Redfield et al. 1936; Foster 1960; Spicer 1962). In the "Memorandum for the Study of Acculturation" (Redfield et al. 1936:149), acculturation is defined as "phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups". While this original definition conceived contact to have mutual effect on both interacting groups, applications of the approach tended to emphasize change within the smaller scale society. The "Memorandum" also qualified for the different types of contact situations (asymmetrical, equal, friendly and hostile); but these categorical conditions served to contrast between the 'acceptance', 'adaptation' or 'rejection' of the foreign culture (Redfield et al. 1936:150-151).

The acculturation model's mechanism for change also privileged Western influence. The adoption of the new culture depended primarily on its advantage or superiority over the existing culture. The Memorandum outlined "economic advantages, social advantages (prestige), congruity of existing culture-patterns" as causes for the adoption donor group traits (Redfield et al. 1936:151). Thus, smaller societies were driven by natural urge to adopt foreign objects and practices that were implicitly more advanced (Cusick 1998:132). The anticipated consequence of culture contact led to the inevitable adoption of foreign culture, conceived of as a set of distinctive traits, including technology, architecture, material culture, etc. by the lower order society. By evaluating

the intensity of foreign material replacements, the Acculturation Model provided a means to measure the degree of acculturation, but never questioned its inevitability.

However, the acculturation approach was not without its ambiguities and tensions. Both Linton (1940) and Spicer (1962) expressed reservations about the original tenets of acculturation, especially with regards to persistent native traditions. According to Cusick (1998:133-134), Linton tried to limit change itself to a change in objects rather than ideas such that the adoption of foreign material traits did not necessarily equate with a change in cultural formation. Spicer followed up on Linton's proposed distinction between *directed* versus *nondirected* forms of cultural contact, where *directed* contact is characterized by coercion and asymmetry in contrast to *nondirected* forms characterized by exchange of an equal or non hostile nature. Based on the conditions of contact, Spicer posited that societies could either innovate and incorporate or resist undesirable changes (Cusick 1998:137). Both authors showed a concern not only with the Acculturation Model's formulation of singular change but with the definition of cultural change itself. Both also questioned the interpretation of change based on the material evidence alone.

The legacy of the Acculturation Model is riddled with the exact ambiguities identified in Linton and Spicer's works. Later criticisms of the acculturation model would point to: 1) the assumption of unidirectional forms of change, 2) the lack of an explanatory mechanism for change, and 3) the conflation of change in material culture with that of cultural identity (e.g., Cusick 1998; Silliman 2005; Lightfoot 2005). While not explicitly associated with anthropological models of acculturation, historians have also been critical of frameworks such as Hellenization, Romanization, Sinicization, and Indianisation for similar reasons (see Wells 1998; Webster 2001; Pai 1999). Influenced by textual accounts produced by historians of ancient empires (e.g. Tacitus, Sima Qian), these frameworks viewed the cross-cultural exchange from the perspective of the imperial centers. In servicing imperial motivations, the textual productions largely presented culture change as a process by which imperial subjects were "given a civilization" (Webster 2001:209). As the following discussion will show, subsequent approaches to the problem in archaeology would similarly grapple with these three issues.

World systems models

Later developments in Anthropology drew upon *World Systems Theory* (WST) to generate an explanatory framework of culture change. WST originally sought to explain the emergence of western capitalist economies out of interactions at the global scale (Wallerstein 1974, 1980). Specifically, under the expansion of European states in the 16th century, incorporated lands became connected by a regional division of labor wherein the differentiated production and exchange of goods and raw materials created structural dependencies across the regional landscape. This world system created a demographically, politically, and economically complex *core* and a less complex *periphery.* The *core* manufactured finished goods and specialized products while the *periphery* supplied the necessary raw materials and human labor to the *core.* Later formulations of *WST* extended the world systems construct to pre-capitalist cases, such as the Mongol Empire (Abu Lughod 1989), Asia (Frank 1993) and to the Uruk phenomenon of fourth millennium BCE Mesopotamia (Algaze 1993).

Since world systems models provided an interaction framework embedded in verifiable economic and political contexts, it provided an attractive alternative to the diffusionist paradigms of acculturation models (Algaze 1993; Rowlands et al. 1987; Kristiansen 1998). According to Stein (1998), "the world system model is appealing to anthropologists because it links politics, economics, geography and even ideology into a unified construct" (224). Cultural transformations were therefore "largely determined by the structural positions these societies occupied within the regional economic and political systems" (Urban and Schortman 1998:105). Where previous acculturation constructs would explain developments in technology and transfer of foreign goods through the diffusion of material traits, WST frameworks could invoke structural dependency as a catalyst for change.

Several researchers have however questioned the assumptions of the world system construct and its applicability to pre-capitalist societies (Dietler 1998; Stein 1998, 2002; Renfrew and Cherry 1987). The model, like that of previous acculturation approaches, only allows for a singular and directed outcome because it assumes an inherent asymmetry. The *core/periphery* distinction imposes a narrowly derived model where the *core* is the principal consumer, and the *periphery* is the passive and exploited recipient of

the core's actions. The *core/periphery* concept relies on a hierarchy of relations in order to function as a tangible model. If, as in many pre-capitalist instances, the local is so distant that the center as a construct is not palpable, the WST construct loses its applicability (Stein 1998:226). Alternately, the potential for competing polities of similar scales, or *peer polity* interaction, could argue for a symmetrical configuration of interaction in many cases of culture contact. Second, the presumed regional division of labor and structural dependency of Wallerstain's framework has been narrowly projected into the past as "a very generalized model of prestige goods and their redistribution" to the *periphery* (Dietler 2005:59). Is an economy of raw materials exports for foreign imports sufficient to maintain the motor of a world system?

Of further interest is the influence of the *core* and *periphery* construct on postmodern approaches to colonialism, but with a paradoxical emphasis on the periphery's resistance as the key social transformation. Specifically, the periphery is broadly envisioned as a geographic, economic and political margin. Margins are equated with excluded minorities and their ostensible struggle for agency against the colonizer (Litzinger 2000:19). The center or colonial metropole exercises control over the periphery through institutional mechanisms of discipline, such as missions, schools and churches. These institutions inculcate western values and create colonial subjects through regimes of socialization and discipline (Foucault 1979). In reaction to the economic and political inequities of colonialism, peripheral subjects attempt resistance movements to preserve their cultural autonomy (cf. Lightfoot and Martinez 1995). Cross-cultural interaction in the postmodern framework produces the opposite trajectory of cultural change – the differentiation of cultural identities and group preservation versus acculturation to *core* standards.

Recent anthropological approaches

Acculturation and resistance are however two extremes of a complex phenomenon and both are predicated on colonial constructs of cross-cultural interaction and the recognition of essentialized cultural differences. As this section will show, recent anthropological studies in the so-called peripheral zones demonstrate a more variable range of social outcomes calling for a re-evaluation of the contact situation. In limiting

culture contact to a moment of conquest, past approaches may have simplified the dynamic process of cross-cultural interactions. The variable forms of cultural interactions on the boundaries of empires can range from limited exchanges and diplomacy, to more forceful military encounters and subjugation (Sinopoli 1994; Lightfoot and Martinez 1995; Cusick et al. 1998; Alcock et al. 2001). In many historic empires, multiple modes of cultural interaction likely preceded colonization and the interaction involved societies ranging widely in their sociopolitical complexity.

Taking into account the variable nature of cross-cultural interaction, new approaches propose concepts such as "the middle ground" and "creolisation" to model culture change for the New World. According to White, the "middle ground" presented an alternative model of interaction between the Iroquois and early French traders that challenged the polarized framework of acculturation versus resistance. White states,

> The middle ground grew according to the need of people to find a means, other than force, to gain the cooperation or consent of foreigners. To succeed, those who operated on the middle ground had, of necessity, to attempt to understand the world and the reasoning of others and to assimilate enough of that reasoning to put it to their own purposes (52).

This conceptual approach underlines acutely the tenuous nature of interaction between cultures where perceptions and existing logics are questioned. Contrary to acculturation and world systems frameworks, the "middle ground" does not assume cultural difference to be intuitive or stable constructs. Instead individuals and communities of both cultures attempt to appropriate what they perceive to be the other's values, a process of reasoning that is ultimately structured by one's own cultural frame of reference. The implications suggest that the conception of group differentiation may be structured by perceptions of commonalities rather than oppositions. Out of these cross-cultural appropriations and misinterpretations, White argues that new meanings and practices arise (x).

Creolization also refers to the emergence of new composite practices out of contact and colonialism. *Creolization* is an analogy originally taken from linguistics and its application in anthropology refers to the creation of a mixed cultural identity out of different ethnic heritages (Hannerz 1987, Mintz and Price 1976). An oft-cited example of this blending process is syncretic religious practices in the New World that combine African traditions from diverse groups with new Christian beliefs (Mintz and Price

1976:57). The "middle ground" and *creolization* approaches differ significantly from earlier formulations on two principles: 1) the conception of culture change as the creation of newly invented traditions in its own right and 2) the mechanism for change as the adaptation to achieve mutual intelligibility through a process of mutual exchange.

Thus far, I have presented a range of conceptual approaches to cross-cultural interaction and change. Although earlier formulations may appear problematic, they present – when viewed in tandem with current frameworks – a range of possible social processes with acculturation and resistance as two opposite ends of the scale. In other words, I believe these approaches provide a valuable model for conceptualizing change.

Table 2.1: Range in cultural transformations

	Degrees of Mixedness		
Acculturation	**Hybridity**	**Creolization**	**Resistance**
Adoption of foreign values, symbols, practices	Emulation and approximation of foreign values	Mutual intelligibility and substitution of complementary parts	Intensified group identification and boundary formation

Acculturation, hybridity, creolization, and resistance do not only describe different forms and intensities of cultural adoption but distinguish between the various mechanisms for change. Acculturation, as discussed in the first section, describes the adoption of the culture of the foreign group. Resistance implies the promotion of group differentiation vis-à-vis a foreign culture, often resulting in the intensification of group identities through boundary formation (Barth 1969; Joffee 2002; Jones 1997; Wiessner 1983; Wobst 1977). Between the opposing ends of acculturation and resistance, there is a range of culture change differentiated by degrees of *mixedness*. In broad terms, the "mixedness" of a contact and colonized culture can range from one that appears "insufficiently differentiated" from the foreign culture, as in the case of Romanized Gauls, to emergent traditions based on pre-existing local and foreign elements. In this framework, *creolization* describes the adaptation to mutual intelligibility where new cultural practices are incorporated according to pre-existing structures or existing structures are incorporated to new cultural practices (Deagan 1983; Ferguson 1992; Lightfoot and Martinez 1995; Mintz and Price 1977). And in many instances, the resulting social practice sometimes resembles neither original nor foreign cultural forms.

The concept of *hybridity* is a more recent expansion on the study of composite identities. Borrowed from the field of cultural studies, the concept refers to a state of "in-betweeness" where individuals internalize both cultures and are able to appropriate this difference in an optimal way according to given circumstance (Bhabha 1994; van Dommelen 2005). Emulation represents an example of hybrid response where the appropriation of certain foreign cultural behaviors expedites access to political and economic resources. *Hybridity* is also sometimes referred to *transculturalism* or the "third space" because it implies the perception and experience of cross-culturalism are not contrastive and dichotomous by nature (Bhabha 1994). Instead, individuals incorporate different cultural constructs as a range of alternative social actions.

One of the enduring contributions of creolization and transculturation to the anthropology of culture contact is to complicate the nature of local response. In showing that cross-cultural borrowing is a normative form of response, these concepts highlight human's infinite capacity for *bricolage* and identify mixed cultural heritages as real "anthropological objects of inquiry" (Palmié 2006). On the footsteps of disciplinary awakening to this theoretical construct should follow an explanatory framework to address the complexity of cultural intermixing. Paradoxically, the same enthusiasm expressed for creolization has complicated the potential utility of the concept for anthropological insight into culture contact. Since its inception, the concept has become a catchall construct, encompassing all forms of culture change from Roman Gauls to so-called globalized cultures (Hannerz 1987), such that some anthropologists have shied away from the term for the lack of specificity (Mintz and Price 1992, Palmié 2006).

Archaeologists have likewise expressed skepticism over the general utility of the concept. The proliferation and divergent use of the term across the discipline have made it difficult to theorize about patterns of cultural transformation. Cusick states (2000: 47),

> In short, creolization is too often being used as a synonym for acculturation or transculturation (which is not useful) or as a proposed replacement paradigm for culture contact (which is not tenable).

However, a rejection of creolization precludes further theoretical work on culture contact studies. An important contribution to redress this issue in archaeology can be found in Dawdy (2000). Dawdy (2000: 111) attempted to draw a distinction between the forms of

cultural mixing through concepts such as *transplantation, ethnic acculturation,* and *hybridization* for understanding colonial culture formation). Specifically, each of these concepts distinguishes between modes of cultural appropriation and adaptation and specifies the conditions under which these processes of culture change would take place. Dawdy's study of colonial Louisiana shows how factors either supportive or restrictive to multicultural integration as experienced across three successive generations (from early settlers to colonists) anticipated certain forms of mixed cultural practices. In effect, Dawdy's study acknowledges that not all forms of composite cultural practices are created equal and the contingencies affecting the processes of change. In the following section, I provide a more nuanced discussion of mixed cultural practices and the different implications they carry for addressing culture change.

KINDS OF MIXED CULTURAL PRACTICES

One way to begin exploring creolized systems is by conceptualizing the possible range of actions contributing to the mixture. For instance, <u>native practices could be synthesized to foreign standards and criteria</u>. This implies a comprehension of foreign systems of value conducive to the creation of some intercultural commensurability. By extension, the acknowledgement of foreign values suggests that the cross-cultural exchange itself has developed some regularity such that cultural practices are not necessarily conceived as dichotomous in nature. In contrast, the countertype transformation is represented by <u>the distillation of foreign practices according to native standards and criteria</u>. This trajectory implies the fixedness of indigenous institutions. Foreign systems of values are not integrated either because its corresponding cultural practices are viewed as incommensurate or simply unintelligible. By extension, this transformation suggests internal constraints intentionally buffering against the incorporation of values perceived as culturally different. While these two processes may not be mutually exclusive, they do underscore the contrastive nature of culturally mixed practices and most importantly allude to very different trajectories of culture change. These two different trajectories are illustrated below with concrete examples from Rome and China.

The synthesis of local practices to foreign standards has been well documented among Roman imperial subjects. Following Roman conquest, the practice of worshipping mixed deities became prevalent both among Germanic tribes and former Hellenic communities. These were two very different cultures: the pastoralist-warriors in the Lower Rhone referred to by the Romans as 'barbarians' and the cities of the Hellenic civilization. Among Gallic groups, cults devoted to deities with double names typically united a local warrior deity with Mars, the Roman god venerated for warfare and martial qualities. Since martiality was a characteristic central to the Gallic warrior ethos and ideology, the proliferation of the cult of Mars in the Gaul region after Augustus reinstated the deity as a god of war is particularly revealing (Roymans 1996:91). The melding of local deities to the Roman official cults indicates a configuration of native practices to fit within the Roman ritual framework, leading to a distinctly mixed practice.

Similarly, the practice of placing Greek gods into the Roman imperial pantheon was also a common practice among the Hellenic peoples incorporated within the empire. Alcock has shown the worship of Anatolian moon god in Antioch alongside the Roman imperial cult sanctioned by Augustus during Roman colonial periods (2005:315-318). Similarly, local elite families of Aphrodisias erected the imperial cult center of Sebasteion, which architecturally incorporated sculptural depictions of Greek myths alongside imperial images glorifying the Roman conquest of subject groups (Alcock 2001:340). In both instances, local groups adapted native practices to fit within the Roman venues of worship and also its imperially sanctioned cults.

However, not all of Rome's imperial subjects were equally receptive to new cultural standards, especially in the Lower Rhine region. Pastoral groups, in particular those who maintained their pastoral-warrior economies into the imperial period, attempted to synthesize Roman practices according to native standards. Roymans (1996) discovered this inversion among the Northern Gauls who worshiped a war deity that blended the local deity Magusanus with Roman Hercules, rather than the imperially sanctioned Mars. Because Hercules, unlike Mars, was also mythologically linked to cattle, he appealed to certain pastoral values central to the native belief system. The intentional appropriation of Hercules to fit within the pastoral ideology suggests the significance of not only existing traditions but the salience of local group identity.

This ritual inversion has also been documented in ancient China, prior to the emergence of Han imperialism. A particularly interesting case involves the Qin State, which despite being one of the polities tied into the Zhou sphere, was nevertheless identified by Warring States (475-221 BCE) period texts as cultural others, specifically as Yi "barbarians" (Shelach and Pines 2006:212). This unsavory portrayal of the Qin was a recurrent theme in textual sources even though the Qin adhered strictly to the ritual codes of the Zhou. This cultural acceptance is evidenced by the Qin's observance of the Zhou mortuary sumptuary system, which specifies discrete offerings of bronze vessels relative to social rank. However, beginning in the mid Spring Autumn period, the Qin mortuary ritual departed from Zhou proscriptions by replacing bronze vessels with ceramic imitations. The adoption of ceramic imitations across different social strata in the Qin state, while other polities continued to observe Zhou mortuary rites, represents a transformation of presumably fixed Zhou norms. This shift has been suggested by von Falkenhausen (2004) as the introduction of new ideas regarding the afterlife and the separation between the realm of the dead and that of the living. This mixed practice shows the transformation of Zhou symbols to accommodate new beliefs emerging within the Qin.

What this comparative exploration of cultural mixing shows is that composite cultural practices can encompass elements of integration, persistence, and creation. Far from being a unitary phenomenon, composite traditions can emerge out of different –non-imperial to imperial – contexts of cross-cultural interaction. And within the same contexts of interaction, the kinds of culture change documented among "subordinated" peoples are not internally consistent.

This discussion has underscored two interdependent dimensions contributing directly to the trajectory of culture change: <u>the variable nature of cross-cultural interaction</u> as defined by different degrees of interaction and <u>the comparative sociopolitical complexity of the two interacting societies</u> as defined by the structural symmetry of respective cultural systems. In the examples mentioned above, the nature of cross-cultural interactions ranged from peer-polity interactions to imperial conquest. Cross-cultural exchanges engaged either politically matched peers (Rome and Hellenic polis, the Qin and Zhou sphere) or asymmetrically matched societies (Rome and Gaul).

These two dimensions, as elaborated in greater detail below, provide the general parameters toward the modeling of culture change.

TOWARD AN EXPLANATORY FRAMEWORK

Having expanded on my conceptual framework in culture change, I present in this section an explanatory framework to address why these different trajectories of culture change might occur. To explain these processes of change more concretely, it is necessary to distinguish both the variability in nature of cultural interactions in specific contexts (external constraints) and the pre-existing local political and social systems (internal constraints) involved in them. Both of these necessarily contribute to the development of different patterns of cultural change. Distinctive forms of cultural interaction ultimately carry different implications for change, and a model to predict possible local responses effectively needs to identify the external and internal constraints structuring culture contact.

External constraints

The nature of the cross-cultural interaction itself places external constraints that shape the form of culture change. Here we must distinguish colonialism from other forms of culture contact. Although Cusick (1998) defined culture contact broadly to include both short-term forms of exchange and long-term involvements such as colonialism, imperialism and slavery, Silliman (2005) has identified colonialism as distinct based on the dominant nature and large scale of interaction. Colonialism exerts sovereignty over subjects through "the imposition of inequality, racism, oppression, labor control, economic marginalization and dispossession" (Silliman 2005:59). While the semantic problem between colonialism and other forms of contact has to be clarified, I suspect that such a divisive scheme anachronistically projects modern colonial constructs on different orders in the ancient past. Instead, it may be more profitable to view the diverse forms of cultural engagement as a continuum, that ranges, from limited exchanges and diplomacy, to more forceful military encounters and subjugation (Sinopoli 1994; Lightfoot and Martinez 1995; Cusick et al. 1998; Alcock et al. 2001).

Thus, the intensity of inter-cultural interaction provides a means to conceptualize the external constraints placed on interacting systems. This recalls Spicer's earlier formulation of *non-directed* to *directed* forms of contact. If, for example, the inter-societal interaction consists mainly of exchange relations that occur over a short term or seasonal basis, then the interests of both parties to culture contact is likely to achieve mutual goals with minimal effort or disruptions to the status-quo. It is expected that there will be limited external impact on the interacting systems. Imperial incorporation, on the other hand, creates structural ties between the economic, social, and political institutions of the two cultures. These ties are expected to be differentially distributed among various individuals and social groups within each of the interacting societies. Depending on the degree of incorporation, which is, among other things, contingent on logistical factors such as geography and value of raw resources, imperial policies can exert limited to extensive pressure on local systems to evolve. Territories distant from the center may be administered through established local authorities such that the existing economic and social infrastructures are maintained. The establishment of colonies with military control to extract tribute and labor would certainly alter the organization of production, thus placing greater demand on the reorganization of domestic and corporate units.

Internal constraints

Internal constraints, in this framework broadly refers to the social structure of the local culture, including the organization of economy, beliefs and ideology, and corporate infrastructures that connect domestic, kin, and community levels together. These structuring principles operate not only on a synchronic level but rely on diachronic continuity to generate a pervasive sense of communal identity. In other words, individual, group and cultural identity can only be validated if there are linkages between the past, present and future. Genealogies, myths, and rituals serve as "conceptual anchors" to a shared past that foster the maintenance of group identity (Rogers 2005:348). Culture change thus implies varying degrees of interruption to the historical validity of social structures.

The degree to which groups maintain their cultural integrity under situations of contact and/or colonization depends in part, on the correspondence between the

interacting cultural systems. Specifically, where two interacting groups are of similar complexity, interactions are more likely to be symmetrical, with members of both societies having familiarity with each other's respective political, economic, and possibly, ideological orders. It is expected that correspondences in cultural logics provide a way to "domesticate" perceived differences or contradictions into existing social structures. Thus, these adoptions meet the expectations of the interacting groups without impinging on either group's historical viability. These kinds of interactions create conditions supportive of the creolized practices discussed above for the Hellenic cases.

In contrast, interactions between groups with very different organizational structures are subject to much greater internal constraints. Where two interacting groups differ in sociopolitical complexity, their interactions are more likely to be asymmetrical, as incommensurate logics can complicate the integration of foreign values into an existing social system. An oft-cited instance of this type of interaction is that between states and nomadic groups (Spicer 1962). Here, it is proposed that the pressures for nomadic groups to adopt sedentism seriously undermine not only traditional subsistence practices but social networks (though see Junker and Morrison 2002 and Eiselt 2006 for some important exceptions). Groups either have cultural mechanisms to buffer against the break down of historical socio-economic structures through resistance, reorganization into larger aggregates (fusion) or dispersion. In instances where existing social parameters cannot accommodate the impact of contact with much more powerful state societies, the smaller scale societies undergo expect to undergo cycles of disruption until group identity loses historical validity.

A MODEL FOR CONCEPTUALIZING CULTURE CHANGE

Taking into account variability in internal and external constraints, this section presents a working framework for conceptualizing culture change. This framework seeks to explain forms of cultural change based on the intensity of interaction and the comparative complexity of the interacting systems. The two dimensions in this framework are probably somewhat interdependent such that the intensity of imperial intervention may be contingent on the comparative complexity of interacting societies.

This crossover is to be expected given the complexity and variability in cross-cultural interaction. Taking into account the multivariate factors structuring this process, the proposed model expects the potential for two-way trajectories of culture change to occur under similar conditions. This consideration also directly redresses the uni-dimensional shortcomings of earlier approaches.

Table 2.2: A model for conceptualizing culture change

	Intensity of Cross-Cultural Interaction		
	Colonized	**Semi-autonomous**	**Independent**
Some parity	Acculturation Hybrid	Creole to Hybrid	No change
Asymmetry	Acculturation Resistance	Creole	No change

Under informal types of exchange, interacting systems experience limited pressure to reorganize internally. Thus no significant cultural change is expected in either interacting group. Exchange may lead to the introduction of some foreign materials, but, contrary to the early acculturation models, I suggest that these do not inevitably require change to the internal structure for their incorporation into society. Instead, these new goods may be integrated into existing cultural practices and conceptual frameworks leading to creole formations. When the interacting societies are of dramatically asymmetrical scales, the consumption of foreign objects is expected to be similarly constrained by internal logics. For example, Pacific Islanders practicing swidden farming readily traded with Europeans for iron axes because they were functionally equivalent to native stone counterparts (Thomas 1992:87). The Arikara of the Great Plains adopted guns and European iron implements to expand upon existing hunting activities that allowed greater participation in the emerging fur trade (Rogers 1990). While such adoptions might ultimately have important long-term consequences, their initial steps need not have had major cultural import to the receiving group. If these exchanges develop into more formal trade relations, economic dependencies may

potentially exert pressures that ultimately contribute to significant cultural transformations.

More extensive forms of interaction include inter-regional incorporation, where the interacting societies formally acknowledge enduring economic and political contracts and ties. Semi-autonomous types of interaction can range from trade partnerships to formalized tributary alliances with an imperial state. Under these forms of interaction, local societies maintain independent rule but the formation of enduring economic dependencies may require structural adjustments. Because the realization of trade and tributary interests depends on cooperation and positive feedbacks, interacting cultures may appropriate foreign practices to achieve a common ground. For example, cultures engaged in border trade often create pidgin and creole languages to facilitate and mediate cross-cultural exchange.

However, with increasing economic dependencies, the organizational limits of smaller scale societies may not be able to accommodate new changes. In the event of trade fluctuations due to changing supply and demand patterns from the more complex culture, smaller scale societies must either adopt new modes of economic production in order to maintain social networks or face social disruption.

If the interacting systems approach comparable political complexity, creole adaptations are also expected to emerge. If economic dependencies become more intertwined, existing internal mechanisms such as social hierarchy and economic diversification may be elaborated upon to accommodate change. For instance, secondary state formations can emerge when two "peer polities" engage in intensifying trade relations, leading to the expansion of the sociopolitical structures (Renfrew and Cherry 1987). These adaptations contribute to the emergence of hybrid forms of culture change wherein inter-cultural differences are appropriated as a range of *shifting* alternatives. For instance, the leader of the Xiongnu state of Central Asia modeled his authority on the Han emperor and ministerial system while simultaneously asserting his personal clan affiliation (Di Cosmo 2004).

Conversely, the political symmetry of an interacting polity can also pose a potential threat to the imperial power. Powerful polities can mobilize large armies that directly challenge imperial authority (e.g.; the Inka and Chimu, Rome and Carthage).

This threat can lead imperial governments to enact drastic measures such as campaigns to annihilate or enslave a peer polity; the outcome would anticipate the acculturation of subjugated peoples.

The most intense form of inter-cultural interaction is imperial incorporation. Imperial incorporation is broadly defined as the conquest of one polity over another leading to foreign rule and occupation. Because imperial incorporation entails variable degrees of foreign intervention in the politics of provincial territories, it is difficult to specify one form of external constraint (Sinopoli 1994). Since local autonomy is subject to imperial policy, which creates structural linkages within the empire, it is expected that incorporated cultures will generally experience pressure to change. If the conquered society is less complex, imperial control may force local peoples to adopt foreign goods and practices by reorganizing existing domestic and social networks. However, these societies may alternately rely on fluid internal mechanisms of group fission or fusion to resist foreign rule.

If the colony is comprised of similarly complex societies, hybrid and acculturative forms of culture change are likely to occur. The integration of colonies into imperial economies may demand local societies to reorganize production, distribution of resources, consumption, and taxation. Incorporation can either rely on the expansion of existing sociopolitical institutions or the establishment of imperial and colonial governments. The first strategy enlists provincial elites into the governing class creating the equivalent of diplomatic middlemen. The cross-cultural nature of diplomatic engagement requires adaptation to foreign values within the limits of local intelligibility, thus leading to the emergence of hybrid change. Conversely, the contraction of local authority and accountability under direct foreign rule may lead to acculturation.

The two-way nature of cultural change underscores the complexity of modeling cross-cultural interaction. While this framework attempts to provide distinct parameters and constraints for modeling the different outcomes, it also alludes to other contingencies lurking beneath the organic structure of culture. Specifically, social dimensions such as class, status, and gender can have a major role in defining the nature of interactions. In addition, individuals, kin groups and communities represent different scales of social action, each having respective interests and motivations that may or may not coincide

under intensified cross-cultural interaction. In effect, diverse and competing interests at the micro-level of society can generate internally contradictory actions.

While this variability can make any precise modeling difficult, it does not preclude the conceptual approach to culture change advocated in this study. At the core of culture change is a re-configuration of personal identity and group affiliation. Because certain social domains deliberately foreground the cross-cutting relationship between personal identity and group affiliation, it is possible to evaluate patterns of cultural conformity and divergence across individual and communal levels. This dissertation focuses on the ritual domain, in particular funerary ritual, to examine the implications of the proposed conceptual approach. The ritual context is one area of cultural production where systems of values must be collectively recognized and renewed through communal participation. As such, rituals call into question the construction of membership within and outside the group. In foregrounding group membership, the relationship between personal identity and group affiliation is inevitably breached. From the individual to communal level, expectations to uphold cultural traditions are solicited. How individual social practices accord with or diverge from longstanding traditions carries significant implications about the nature of cultural transformation. Following this logical premise, this dissertation examines individual and community practices in the production of funerary ritual during the period of Han imperial expansion in Southwestern China.

In chapter 3, a survey of textual accounts and mortuary practices along the frontier of ancient China examines the implications that different forms of cross-cultural interaction have for culture change. By evaluating the current approaches to the use of mortuary evidence and textual sources in the study of culture change in ancient China, I also dissect the longstanding assumptions underlying these approaches and the limitations they present for the study of culture change.

Chapter 3
Contextualizing Han Imperialism and Native Response

If we regard this place as a barren land with a useless population for which the Sage King should not lay burdens upon Central China, then we should abolish the commandery, abandon its people, and cut off its kings or marquis from any further contact with us. But if on the other hand we feel that the achievements set up through successive generations by former Emperors should not be destroyed, then we should act early to nip this trouble in the bud. (Counsel given to the Grand General Wang Feng with regard to the southwest unrest, 27 BC in *Zizhi Tongjian,* [translation Sun and Xiong 1983:248])

Later Governor Zhang He of Ba Commandery exercised so honest and just a rule that he won peace among the tribes. The barbarians treated him with great affection, as if they had lost parent (*Hou Hanshu* 'Account of Southwestern Barbarians' AD 43 [translation Sun and Xiong 1983:249]).

The imperial expansion of the Han State began at the end of the third century BC and incorporated, over the next four hundred years, a vast region extending from Korea to Vietnam and as far west as the Tarim Basin. Relations between the Han and their imperial subjects were not uniform, ranging from local resistance to voluntary acceptance as the above account illustrates. Textual sources divide tribal peoples between the morally incorrigible and the "coalition of the willing". Barbarians that were once the genial subjects of the Han would sometimes revert back to their original ways and become foes of the empire, lending to an uneven political landscape (Yu 1962:59). Implicit in the Han court's characterization of these transactions – and its perplexity over the situation – is an evolving debate about defining cultural "others" that accompanied the court's attempt to achieve a sensible imperial policy. Frontier peoples were distinguished not only by their great cultural and linguistic diversity but also by the varying complexity of their political organizations. This cultural variability posed a challenge to the imperial enterprise and local resistance was serious enough to cause the court to question the cost of imperial campaigns (Debate on Salt and Iron, Book 4, ch. 16). Imperial expansion compelled the Han court to both explain and rationalize cultural

difference and diversity and the conditions favorable to *sinicization.* Han effort to address these different regional conditions meant that incorporated territories experienced different intensities of imperial involvement and the range of these policies elicited varying patterns of cross-cultural interaction and social change.

The aim of this chapter is to examine the nature of Han administration in relation to the diversity of its imperial subjects drawing on textual and archaeological sources. I first examine ancient textual sources to compare Han perception of each regional culture and the imperial policy in those respective regions. In the second part of the chapter, I compare mortuary materials from these frontier zones with that from Yunnan to evaluate the nature and intensity of Han imperialism on local cultures. As this discussion will show, the two sources do not always produce corresponding views of cultural transformation along the empire's borderlands, thus underscoring the problems associated with a direct historical approach. Beyond the explanatory limits associated with this approach, this chapter underlines the fundamental challenges of addressing "Han" identity in the archaeological materials.

TEXTUAL SOURCES ON HAN INTERACTION WITH XIONGNU, YUE, AND CHOSUN (CHAOXIAN)

The Han identified foreign groups according to perceived differences in subsistence, dress, customs, and political leadership (Yu 1967, Wang 1997, Allard 1998, Di Cosmo 2002). Far from being simple descriptions of foreign peoples, these accounts reflect a valuation system defined by cultural distance from Han norms. Han culture is identified with that of Central Plains states and with the autonym of *Huaxia* 华夏 or *xia* 夏 peoples, a term dating to the Warring States period (471 – 225 BC). In general terms, the people of *Huaxia* heritage recognized a common heritage linked to the Three Sages and observance of the social proscriptions in the *Liji* 礼记 or Book of Rituals (Wang 1997:96)[1]. The concept of *li* establishes both customary codes for proper behavior as well as the rites associated with the observances. The concept of *li* probably intimates at a conception of moral universalism rather than marking any bounded group identity.

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[1] This notion of homogenous Huaxia culture has been often criticized in favor of a more heterogenous model (see Bagley 1999, Brown 2007, Brindley 2003, Holcombe 2001).

Some scholars have argued that non-civilized groups could potentially adopt *li* and become part of the *Huaxia* framework in early China (Peters 2002:85). Thus, ethnic identity in early China should not be strictly conceived along the political and territorial framework explicit in the construction of the modern Chinese state. In addition to observance of *li*, the Han are further distinguished by their political and economic organization, based on settled agricultural economy and a centralized bureaucracy. Description of foreign peoples in the textual sources, as the following discussion will show, often contrasted them culturally along these lines of political and economic differentiation.

Xiongnu, Xianbei, Qiang

The Xiongnu, Xianbei, and Qiang peoples of the northern steppes and western frontier presented the most distant group culturally (figure 3.1). The Xiongnu consisted of tribal polities practicing a mixed agro-pastoral economy and encompassed a territory extending from Inner Mongolia to the steppes.[2] Descriptions of the Xiongnu focus both on their pastoral lifestyle as the following passage states,

> Their occupation is raising animals, they go hunting with bow and arrow; they follow their animals according to the availability of pasture, and their abode is not permanent; they are difficult to capture and control. (*Hanshu* 52, 2400 in Di Cosmo 2004:213)

The Qiang are also noted as "not having fixed abode and without a leader" (Account of Western Qiang from *Houhanshu* in Wang 1997:296). The descriptions here contrast the economic and political organization with that of the Han, one based in agricultural and permanent settlements under the leadership of the Emperor. In association with these descriptions is also commentary on the influence of a 'pastoral' lifestyle on the nature of these peoples. Due to the marginal conditions and lifestyle of the steppe environment, the Xiongnu are driven to a fierce and beastly state as noted by Pan Ku in *Hanshu* (32-62 AD):

> Of the Di, greedy and profit seeking, hair draped over their cloak and having a beastly nature (Account of Xiongnu in Wang 1997:294).

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[2] Xiongnu may be affiliated with Turkic, Mongolian, Finno-Ugric or Indo-European groups though there remains much debate over these associations (Di Cosmo 2004:166).

These environmental conditions preclude them from "humanness" and compel them to acts of moral indecency as noted in the following passage:

> Upon father's death, [Xiongnu] marries mother. Upon brother's death, he takes the brother's wife. (*Shiji* "Account of Xiongnu" in Wang 1997:294).

In effect, barbarism appears as a cultural behavior set by environmental conditions. Even in passages dealing a more conciliatory tone, Sima Qian associates the Xiongnu's carefree pastoral lifestyle with a flexible political system in which the "communal laws are not burdensome" and "the relationship between ruler and subject is relaxed and simple"(Di Cosmo 2004:270). While this passage may be interpreted more as a critique of the Han government, the basic argument emphasizes again the contrast between a Xiongnu mode of subsistence and political organization versus that of the Han, a landed, agrarian and bureaucratic system.

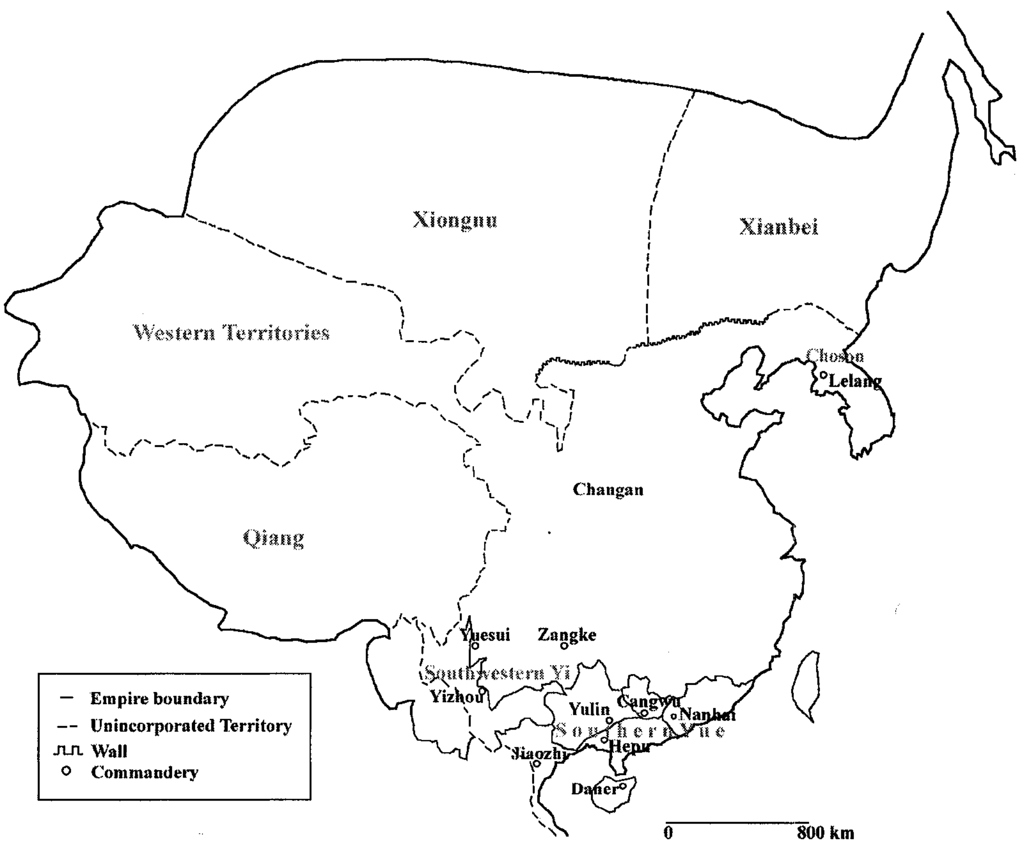


Figure 3.1. Map of Han Empire 1st c. B.C.

Southern Yue and Choson

In contrast to the Xiongnu and tribal peoples of the western frontiers, the Southern Yue[3] and Chosun were 'closer' in cultural and economic distance to the Han. This cultural proximity is not only due to these groups' agriculturally based subsistence but also the role of Central Plains personages in the establishment of these polities following a process of secondary state formation.

The founding of the Southern Yue kingdom is identified with an official called Zhao Tuo, who was a Qin general in Lingnan (Canton) region. At the fall of the Qin in 210 BC, he installs himself as monarch and rules the region, which consisted of many local "Yue" tribes, as an independent kingdom. Relations with the Han fluctuated between periods of peace and aggression. While Zhao Tuo accepted Han vassalage under Emperor Wendi's reign (180-157 BC), he also defied Han authority by parading himself around as the Son of Heaven and adopting local Yue customs (Wang 1997:307; Allard 2006:235). Southern Yue's independence ended with Han Wudi's conquest of the kingdom in 112 BC, which incorporated the territory into nine commanderies stretching from Canton province to northern Vietnam. Han perception of the Yue presents an interesting contrast to that of the Xiongnu where the Yue are tied into a framework of kinship with *Huaxia* peoples. The following *Shiji* passage notes that,

> Gou Jian, the king of Yue, was the descendant of Yu and the grandson of Shao Kang of Xia. He was enfeoffed at Kuaiji and maintained ancestral sacrifices to Yu. [The Yue] tattooed their bodies, cut their hair short, and cleared out weeds and brambles to set up small fiefs (SJ 41, p 1739 in Brindley 2003:27 and Wang 1997:309).

The passage notes that the Yue are not only descended from the same lineage as the Han but pursued worthwhile activities such as agriculture, even though they followed uncustomary dress codes (tattoos and short hair).

The Chosun (Chaoxian) polity is located in modern day Liaodong Province and northern Korea peninsula (Barnes 1999:208-209). Much current debate about the Chosun

[3] There is much debate concerning the identification the Yue people(s) since the term itself has evolved from a reference to one polity in the Zhou period to the dispersal of "Bai Yue (A Hundred Yue)" when the Kingdom of Yue was defeated by the state of Chu in 333 BC (Brindley 2003:11, Peters 2002, Pulleybank 1977)[3]. Yue appears as a toponym extending from the southeastern coast of China to the southwest and to the Vietnam region. Some Chinese scholars view the term as a geographic reference to regions of wet-field

concerns the ethnic identity of this kingdom and the accuracy of the Han account, which attributes the finding of the Kingdom of Chosun with Weiman, a Yan state official.[4] Like the Southern Yue King Zhao Tuo, Weiman set up an independent kingdom in a foreign land and installs a "Han" style government with grades of ministers in 195 BC (*Shiji*). The Han court accepted Weiman as a foreign vassal in 194 BC and under this tributary status, Weiman became an intermediary agent, negotiating trade agreements between local tribal groups with the Han court (Pai 1992:309; Wang 1997:300). Chosun's independence ended when Han Emperor Wu led a campaign against Chosun in 109-8 BC and incorporated the region into Lelang Commandery. Textual treatment of the Chosun, while noting the foreign background of the subjects, includes them as descendents of the *Huaxia*. In a passage from the "Chapter on Geography" in *Hanshu*, Pan Ku recounts a Chinese (箕子 *jizi*) who brings the people of the Chosun region the rites, agriculture, and sericulture, and of the harmony under which "there is no thievery between the people and the need for doors separating [neighbors]" (Wang 1997:299). Like the Southern Yue, the people of Chosun figure nicely into the Han narrative of shared cultural background because their subsistence base and moral convictions are compatible with those of the Han. Implicit in this discourse is also the feasibility of incorporating people who are different in *degree* but not in essence.

Han imperial policy toward the Southern Yue and Chosun reflects to a degree the inclusive sentiments noted in the above historical accounts. Pacification of 'barbarians' was not subjugation achieved merely by force alone, but also by their willingness to become 'Chinese' through adopting the values and practices of civilization (Di Cosmo 2004:104). Before the campaigns of Emperor Wu, both polities had entered into vassal relations with Han. Being a subject state entailed land surrender to the Han but local administration and autonomy were largely left intact as seen in the following reign of Zhao Tuo and Weiman's descendents (Yu 1967:73). As the Han Empire expanded, the territory was divided into inner (内属 *neishu*) and outer provinces (外属 *waishu*), with

rice agriculture. Regardless of these constructions of the Yue term in pre-Han period, an actual polity called the Southern Yue (Nanyue or Nam Viet) emerges after the fall of the Qin State in 210 BC.

[4] According to Holcombe (2001:166), "the basic ethnic difference between Yan, prehistoric north Korea, and early imperial northeastern China may not have even been very great." And that a single distinctive language had been spoken across the entire region.

outer provinces being bordered by fortresses and those on the inner being subject states (Fiskesjö 1999; Yu 1967:70). While the status of becoming *neishu* amounted to a surrender and acceptance of subordinate status, it was not without its advantages as an advisor within Southern Yue's court advised Zhao Tuo's successors to request *inner* status (Wang 1997:307). Beside the obligation of tribute payment to the Han, this relationship opened up opportunities of trade to the vassal state, which likely enabled these kingdoms to support the tribal groups constituting their own tributary network. The local rulers, for the most part, ruled under relative local autonomy.

However, following the defeat of the Xiongnu and stabilization of the northern frontier, the Han began a more aggressive policy of incorporating the south and northeast through the "divide and rule" tactic. The Han mounted a military campaign on the Southern Yue in 112 BC following a Yue revolt by conscripting Ba and Shu tribal (of Sichuan Province) prisoners to attack the Yue. The Han also threatened Yue allies, such as the King of Yelang 夜郎(of Guizhou Province), to change its allegiance to the Han (*Shiji* 116, p 3006). Both the Southern Yue and Chosun became commanderies of the Han Empire in 108 BC following their defeat and their territories were incorporated into administrative units based on province-county 郡县 *jun-xian* system.

Southwest Barbarians

The southwest barbarians, referred to as the 西南夷 *Xinanyi* in Han historical texts, consist of various tribal groups extending from western Guizhou and Yunnan to Myanmar.[5] Han foray into the region was supposedly sparked by an interest in finding a southern route through India to reach Bactria since the northern pass was threatened by Xiongnu insurgence (*Shiji*). While Han documentation of these groups is brief and provides less detail than the accounts on the Xiongnu and Southern Yue, the account does describe the diversity of cultural groups in the region.

> There are dozens of chiefs ruling among the southwestern barbarians, but the most important is the ruler of Yelang. To the west of Yelang live the chiefs of the Mi-mo, of which the most important is the ruler of Dian. All the tribes ruled by

[5] The main textual sources are Shiji "Record of the Historian"(ca. 145-90 BC), Hanshu "Records of the Former Han" (ca. 32-62 AD), Hou Hanshu "Records of the Later Han"(398-446 AD) and the Huayang Guozhi "Records of the State of Huayang"(ca. 4th c. AD). The last three sources draw extensively from the Shiji.

> these chiefs wear their hair in the mallet-shaped fashion, work the fields, and live in settlements. Beyond them to the west, in the region from Dongshi to Yeyu are the tribes called Sui and Kunming, whose people all braid their hair and move from place to place with their herds of domestic animals, having no fixed homes and no chieftains (*Shiji* ch 116 in Watson 1961:290).

The account differentiates the groups based on the political and economic scheme seen in earlier discussions of the Xiongnu, Yue and Chosun: the presence of leadership and agricultural subsistence versus a nomadic mode of subsistence. The chapter then proceeds to chronicle the Han campaigns into the region following the fall of the Southern Yue Kingdom and the absorption of these tribal groups, many of which were possibly allied with the Southern Yue, into commanderies. Only Yelang 夜郎 and Dian 滇, the two largest polities with agricultural economies, receive a seal from Han Emperor Wudi in 109 BC, acknowledging their right to rule as inner vassals. Once Yelang and Dian accepted Han vassal status, the two respective territories were incorporated into the Jianwei, Zangke and Yizhou commanderies (Fang 1987:33-35).

With regard to the political organization of these tribal groups, the *Shiji* pays particular attention to Dian's political system,

> The king of Dian possessed a force of some twenty or thirty thousand men, while to the northeast of him lived the tribes of Laojin and Mimo, which were ruled by members of same clan as himself and were in a position to aid him (transl. Watson 1961:295).

The Laojin and Mimo, based on their geographic location to the northeast, are thought to occupy the Qujing Plain, the study area of this dissertation. However, given the proximity of the Qujing Plain to the Yelang polity, scholars have also suggested that Qujing Plain was an affiliate of Yelang or one of the 22 principalities under Yelang rule noted in the *Shiji* (Song 2003:50). Other scholars have suggested Qujing served as possible buffer zone between the Yelang and Dian (Wang 1998:376,; Rode 1999:143). Of further confusion are the use of Mimo as an interchangeable name with the Dian and the conflicting locations assigned to Mimo by later historical texts (Fang 1987:13). Passages in later texts, the *Hanshu* and *Huayang Guozhi* 华阳国志(4th c. AD), note that different groups occupied the same region as the Dian, thus suggesting the possibility of multiple political entities (Allard 1996:330). Thus, the actual geographic scale and

boundaries of these groups were probably not politically integrated. This possibility is suggested in the *Shiji*, which describes the Dian and its clansman, the Laojin and Mimo, operating independently in relations with the Han. Dian is cooperative with the Han, but the Laojin and Mimo are described as making frequent attacks on Han envoys (transl. Watson 1961:295).

A comparison of the description of southwestern barbarians with the accounts of the Southern Yue and Chosun also suggests important sociopolitical differences between these polities. In both the Southern Yue and Chosun kingdoms, the *Shiji* notes that the political structure of the two polities consist of military and administrative officials (on Southern Yue see *Shiji* ch. 113 and on Chosun see ch. 115). Thus, in the Southern Yue Kingdom, there exist ministers, marquis and military leaders to serve under Lu Jia, the prime minister (Watson 1961:245-6). In the Dian case, the account gives evidence of a leader but description of subordinate administrative personages is absent. The impression gained from the textual description suggests that both the Southern Yue and Chosun had more elaborate political structure that resembled the system of the Central Plains versus the unsubstantiated organization of the Dian region.

As seen in the cases of Southern Yue and Chosun, groups with common political and economic backgrounds to the Han are incorporated into a common origin framework. The *Shiji* chapter devotes attention to formulating a common origin for the Dian peoples and traces the roots of the Dian people to the Chu State, a Central Plains culture. According to the *Shiji*, the Dian are descendants of Zhuang Qiao (or Zhuang Hao), a 3rd century Chu general who carried a campaign into the Dian region but was forced to stay behind because Qin forces had blocked his return passage (Watson 1961:91). Instead, Zhuang Qiao and his troops remained in the Dian area and established a kingdom. The historicity of the Zhuang Qiao figure has been questioned such that even the author of the *Hou Hanshu* attempted to correct for the apparent time discrepancy between Zhuang Qiao's arrival in the region and the Chu King's reign period in the *Shiji* (Wang 1997:206; Rode 1999:259; Allard 1998:329). The *Shiji* also describes an encounter between the King of Dian and a Han envoy in which the Dian ruler shows his apparent ignorance of the Han State. He asks, "Which is larger, my domain or that of the Han ruler?" It is interesting that descendents of a Central Plains figure should have no knowledge of the

extent of the Han state. Chinese and western scholars have challenged the veracity of the Zhuang Qiao story based on textual and material evidence (Watson 1971; Zhang 2001). Specifically, given the questionably few commonalities between Dian and Chu material culture, Watson (1971: 150) concludes that the "Zhuang Qiao myth smacks too much of a dynastic fiction adopted to legitimize the Dian". Therefore, even though the narrative on Dian origins follows that of the Southern Yue and Chosun, the region may have been quite distant culturally from the Han with limited prior contact with the Central Plains.

So who are the Dian, Laojin and Mimo? Discussion concerning the cultural origin of southwestern barbarians is complicated by the liberal adoption of ethnolinguistic groupings, historical textual toponyms and archaeological cultural complexes. The more traditional view holds that the Dian, Laojin and Mimo were likely part of the Hundred Yue 百粤, defined by Brindley (2003:11) as a composite and proliferation of Yue peoples extending from the southeast coast of China to Vietnam. This generic cultural complex is also identified with rice agriculture, pile dwelling architecture, and the use of frog motifs (Zhang 2001:16). A more recent assessment proposes that these groups represent a synthetic mixture of Pu 濮 and Di 狄 ethnic peoples. The Pu were a group located on the border of the Chu State and the Di were pastoral nomadic groups pushed south under the expansion of the Qin State in the 3rd c. BC (Yang 2002:93; Tchiou 2005:309). This mixture accounts for the apparently syncretic nature of Dian material culture, which combines the "animal style (especially of animal combat)" of steppe materials (presumably of Di transmission) with Chu-style shaft tomb burials (presumably indirectly received from Pu). However, according to Fang (1987:24-25) and Zhang (2001:15), the ethonym "Pu" appeared only in Shang to Western Zhou period (1500 -771 BC) sources and should not be confused with the later "Pu" peoples referenced in the *Huayang Guozhi* (4th c. AD). The mixed Di-Pu ethnic hypothesis illustrates well the problem of assigning ethnic categories – regardless of their shifting historical context – to archaeological complexes. Cultural group identification remains a very difficult problem to resolve because there is no systematic attempt to define and distinguish between tribal and ethnic, or social and cultural groups, in historical usage. A more conservative stance is probably to accept the Dian, Laojin and

Mimo as members in some regionally recognized cultural and linguistic community but operating as mostly distinctive political units.

Following Han colonization, the southwest region was established as the Yizhou commandery consisting of 24 counties with the administrative seat based in the Lake Dian area. The administration of the commandery fell under the control of a court appointed governor/grand inspector 太守(*taishou*) along with subordinate prefect 令 (*ling*), and commander 长(*zhang*). Han control over the region was very uneven and possibly less stable than in Southern Yue and Chosun. In Yizhou commandery itself, we read of a total of at least seven major native uprisings between 105 BC and AD 176 (Sun and Xiong 1983:247). The influx of Han migrants into the region, which De Crespigny estimates to have increased the population from 600,000 (2 AD) to 2 million (140 AD), suggests that this significant demographic trend may have transformed the social make-up of the region (1996-7:759-768). To raise funds for putting down local revolts, the Han government levied comparatively much higher taxes on the region, even though the soil quality was rated to be some of the least productive in the empire (Xu 1980:91). The demographic shift and heavy tax burden likely contributed to regional civil unrest.

The persistence of tribal revolt suggests that Han efforts at incorporation and acculturation were neither successful nor sensible. The Han administration did attempt to 'sinicize' tribal peoples through educational efforts, specifically the establishment of Han schools to instruct local elites in Yizhou (Wang 1997:305). However, political administration over the region in general operated on a mixed Han and native system dependent on multilateral networking; Han rule in the county seats and local chiefs outside the immediate boundaries of the counties. Textual accounts continue to mention local influential personages with such titles as kings, nobles, and chiefs (Fang 1987:32). The *Shiji* passage describing the Dian king's acceptance of the Han imperial seal and vassal status ends with the comment, "a [king] leader among his people," implying rather the perpetuation of the king's sovereign status (Fang 1987:32). The *Hou Hanshu* also documents an instance in 24 AD where a local tribal leader of Qiongdu usurps power and convinces the Han court to recognize him as Governor of the Yuesui commandery, located north of Yizhou. While a Han military command was passing through Yuesui to Yizhou, this native governor suspects the Han presence as a challenge to his autonomy

and tries to sabotage the envoy (transl. Sun and Xiong 1983:250). This anecdote illustrates the interesting possibility of a native leader ruling independently under the guise of a Han administrator. In contrast, these titular native individuals are absent from Chosun and Southern Yue following Han conquest. The southwest region likely retained a culturally heterogeneous background that maintained some independence under Han colonization. The great distance between the region and Han center additionally made any intensive undertaking to incorporate it a challenge.

ARCHAEOLOGICAL EVIDENCE OF HAN INTERACTION WITH XIONGNU, SOUTHERN YUE, CHOSUN AND SOUTHWEST

The textual sources provide a primarily Han view on cross-cultural interactions. To gain a perspective from the other end, archaeological materials provide an independent source of evidence documenting the process of these interactions as they develop in 'local' contexts. Archaeological data from these regions are available mostly from burial contexts. This section will provide a broad comparison of burial practices of the Xiongnu, Yue, Chosun and Southwest regions to investigate the degree of cultural influence experienced by these societies under Han expansion.

Han mortuary system in grosso modo

Material and grave treatments: elite burials

The Han conceptualized death as a continuation from this world to join the ranks of ancestors in the other world. Death thus conveyed life as it progressed into the next stage. According to Han burial customs, the tomb should ideally represent a home for the deceased in which to continue the next life (Figure 3.2). Not only was the burial structure supposed to resemble the house, but the furnishings and provisions placed in the tomb were supposed to mirror those used in life. In general, material offerings included both the mundane household goods (utensils, serving ware, and toiletries), food, garments, ornaments, and coins, as well as objects associated with wealth and status (official seals,

mirrors, and ceramic models of farms and estates).[6] The quantity and quality of offerings usually reflected the deceased person's wealth and status. Most of the bronze, lacquer, and pottery offerings were food and beverage containers (Wang 1982:207).

Grave orientation in the Central Plains sphere tends to fall along a north-south axis (Shelach and Pines 2006:214-215). This manner of grave alignment appears to accord with distinct ritual proscriptions described in the *Liji* (檀弓纪 *Tangong ji* juan 9).[7]

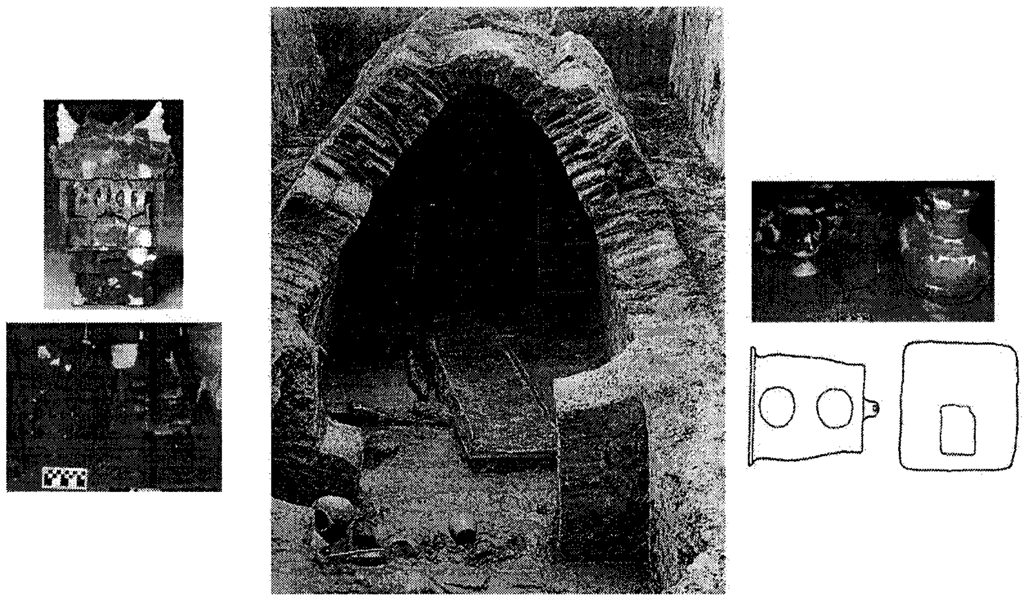


Figure 3.2. Han vaulted brick tomb with classic mortuary grave assemblage.

This portrayal of Han mortuary ritual as a concordant representation of the "lived" world inevitably glosses over a very complicated belief system regarding the soul and spirituality. Numerous scholars have attempted to address the cosmological concepts that actually configure the mortuary offerings and practices (Cook 2006; Lai 2003; Brown 2002). For example, Lai (2003:33) shows that the so-called mundane objects associated with personal use (belt hook, utensils, weapons, etc.) are actually listed in the Baoshan burial inventory as travel kits. The inclusion of these objects in the mortuary context was

[6] With the exception of items representing social status, most types of grave offerings related to mundane activities and personal dress appear in commoner burials. Coins, for instance, even appear in the burials of convicts and conscripted laborers (Wang 1982:212-13).

[7] 葬於北方，北首，三代之達禮也，之幽之故也。To bury the corpse in the northern suburb with the head pointing north is in accordance with the noble rites of the three dynasties (Xia, Shang, Zhou). It is the death journey desired by the ancients.

intended to accompany the individual on the perilous journey to the otherworld; the otherworld being conceived a distant and untamed place (Lai 2003:22). While the Baoshan burial dates to the Warring States period, the continuity and florescence of these mortuary customs into the Han suggest the formation of a distinctive funerary custom. Within the Central Plains cultural sphere, these practices express dimensions of personal identity that simultaneously appeal to particular symbolic concepts.[8]

Material and grave treatments: commoner burials

In comparison to elite mortuary practices, there remains a limited understanding of commoner ritual practices. Based on a review of excavation reports, commoner burials appear to be located in cemetery grounds and contain simple grave offerings consisting of a few coins and coarse pottery vessels (Wang 1982:212-213). Most burials are shallow pits though some burials are partially lined with bricks. Based on excavations carried out at large cemetery sites (Xuecun 薛村 and Xingtu 刑徒 cemeteries in Henan), less elaborate graves have also been found to be oriented along a north-south axis (CASS 1972:18-19; Henan Ribao 9/27/2006).

Beyond the limits of the Central Plains, the occurrence and incorporation of these objects may have had very different meanings and social implications. The mundane funerary items mentioned above had wide currency, circulating to regions outside the Han cultural orbit. These items can be broadly divided into two categories: objects obtained through official and illicit trade with the Han (iron implements including tools and weaponry, bronze coinage, and ornaments such as belt buckles) versus gifts received through Han diplomacy (bronze mirrors and seals) (see figure 3.3). In addition to the political significance of the diplomatic gifts, items such as mirrors and jade suits appeal to Han ritual conceptions of longevity and function to preserve corporeal integrity. (Brashier 1995: 228; contra Brown 2002). The different paths of circulation for these

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[8] Far from monolithic or uniformly constructed system of practices, the Han mortuary system is itself characterized by wide variability. First, examination of elite burials within the Han sphere shows great regional contrasts. See the diversity of local inflections in tomb architecture, material culture and mural depictions in the elite burials of Sichuan province (Erickson, 1997; Tang 1993; Huang 1998). Also see Brown 2007:7-10 for a lucid discussion on definitions of Han culture. While a Han metropolitan standard may exist, it likely represents an ideal which is not systematically understood in practice.

objects underscore the distinctive values associated with these categories of goods. As will be discussed later, the variable dimensions of cross-cultural exchange and consumption systems complicate the inferential basis of Han objects as direct cultural referents.

Table 3.1: Types of Han objects in circulation in the imperial borderlands

Han Trade Items	Han Diplomatic Items
Iron Implements	Bronze, gold, silver seals
Bronze Coins	Mirrors
Ornaments	Jade suits
Crossbow mechanisms	
Lacquer ware	

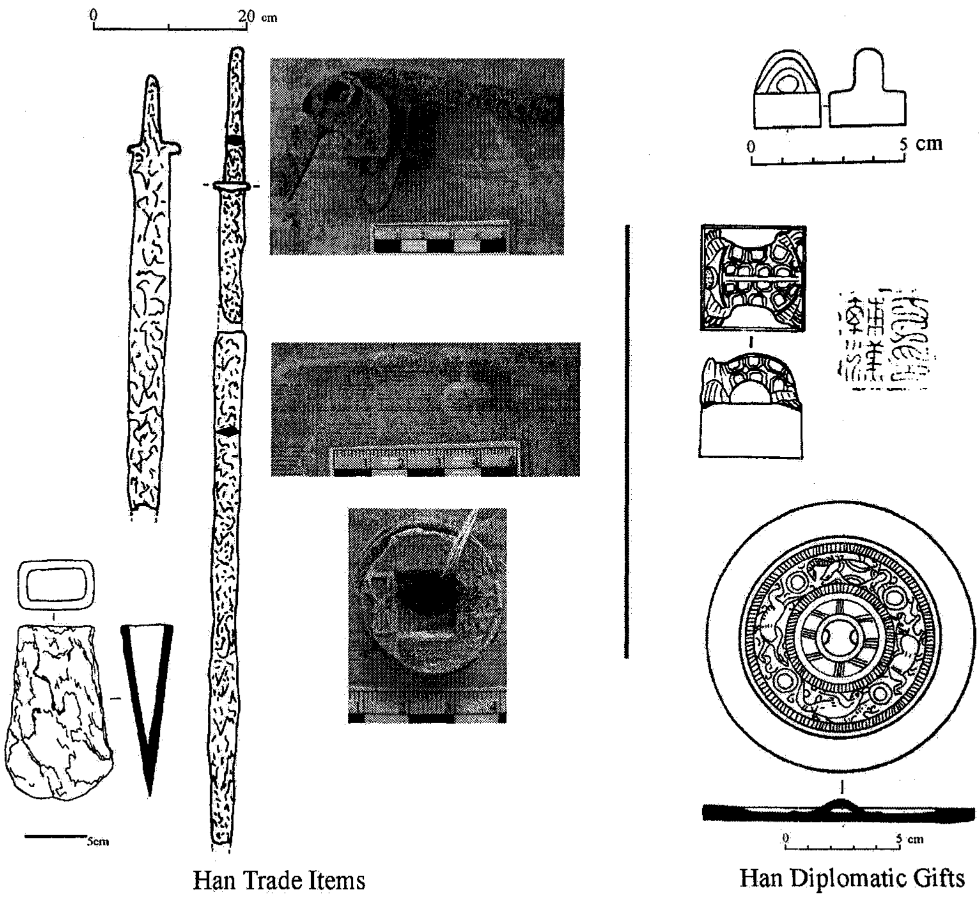


Figure 3.3. Diagram of the two categories of Han goods.

Mortuary forms of the Southern Yue, Chosun, and Xiongnu

Evaluation of the elite tombs from the Southern Yue and Chosun region presents important contrasts with those from the Xiongnu region. The differential adoption of Han metropolitan goods bears a correspondence to the degree of imperial incorporation under the Han. Of the many tombs excavated in the Southern Yue capital region, the trend points to an increasing adoption of Han customs in burial practice including brick tomb construction and grave good furnishings including ceramic models of stoves and farms, censors, lacquered items, and iron tools (Allard 2006:241). The tomb of Zhao Mo, the second king of Southern Yue, shows strong links to elite Han mortuary consumption patterns as evidenced by the typical multi-chamber tomb along with a jade suit (von Falkenhausen 2002:224). Zhao Mo's identification with Han culture is further supported by a ceramic 瓮 *weng* type jar carrying an imitation seal mark impression of the famed Han palace in the capital of Xian, 长乐官器 Chang le guanqi (Huang 1998:155). Excavations of lower rank burials at the Luobowan 罗播湾 site, however, show maintenance of some local artifacts (bronze drum, situla, tripod vessel) in an otherwise typical Han style tomb. Interestingly, the burial also contained sacrificial victims, a mortuary practice that had been legally banned by the Han (Wang 1982:208). Peng has observed that the anatomical features of the sacrificial victims resemble southern Zhuang minority (Peng 1988:114).

Burial practices in the Chosun region also increasingly adopted Han mortuary customs, though there is evidence pointing to greater variability in the adoption of Han traditions. Elite tombs from the possible seat of Lelang commandery show brick chamber tombs containing lacquer vessels imported from Han production zone in Sichuan and grave offerings such as seals, mirrors, and horse carriage (Barnes 1999:208-209). Based on the correspondence of these burial forms to Han customs, scholars have assigned these graves to Han officials. However, even the brick chamber type tombs also contain a mixture of native implements consistent with local pit-burial traditions (Barnes 1999:209). In contrast to these Han style burials, native pit-burials include a mix of native bronze weaponry along with Han mirrors, iron weapons, crossbows and coins. Based on the discovery of a Han silver seal bearing the title "Prince of Pujo Yegun" in

one of these native tombs, Pai (1992:314) suggests that the occupant identity as a 'sinicized inner barbarian'.

Burials from the Xiongnu and Xianbei region from northeastern China to Central Asia indicate very limited adoption of Han cultural forms. Among the numerous Xiongnu burials excavated in Inner Mongolia from the Han period, grave assemblages contain primarily local ceramic and bronze grave offerings with few Han items (Zhang 1989:430-438). For example, excavations of a cemetery site in south central Inner Mongolia suggest that clothing style remained distinctly native. Fifty-seven of 79 burials at this site contain a sculptural animal style plaque buckle of steppe tradition with few Chinese import objects; while the remaining 22 burials contain a Central Plains style belt hook and follow a different grave orientation (Bunker and So 1995:83). Elite burials from as far as the Minussinsk and Transbaikal area contain Han luxury imports such as mirrors, pottery, silk, and coins but nevertheless maintain Xiongnu mound burial forms and steppe style bronze weapons, clothing, and horse gear (Yu 1980:104-105). Exotic goods are not exclusively of Han origin either. They include textiles and ornaments from Central Asia (Honeychurch 2006:264-265). In effect, the inclusion of Han items in Xiongnu burials approximates a pattern of prestige goods consumption much like that seen in elite Han burials' accumulation of exotic objects from all corners of its empire. In contrast to the burials from the Southern Yue and Chosun region, there is limited evidence suggesting acculturation to Han mortuary customs.

Mortuary Forms in the Southwest

Under Han incorporation, burial trends in the southwest exhibit both a continuation of native practices and the emergence of Han style customs. Native burials undergo some modification to the grave assemblage while two different Han-style burial types emerge. I briefly summarize each mortuary type and their possible ethnic association as interpreted by the local archaeologists (see Figure 3.4).

At the major Bronze Age cemetery sites of Yunnan, individuals continue to be buried according to existing mortuary patterns. In the Lake Dian area, burials at the cemetery sites of Lijiashan 李家山, Shizaishan 石寨山, and Yangfutou 羊甫头 continue to practice shaft tomb interments. Following Han conquest, Han objects of both trade

and diplomatic categories begin to enter the mortuary assemblage at these three sites. Trade objects consist of iron implements (swords, knives, sickles, axes, arrow points, crossbow mechanism), bronze cooking vessels (cauldron), Han coinage and personal ornaments such as bronze belt and stone beads. These objects have a wide circulation in native cemetery sites from the Lake Dian area and Qujing Plain, to the Zhaotong area near Sichuan and are not preferentially distributed to the most elaborate burials at these sites (Zhang 2001:36). Among these graves, Han items are incorporated into a grave assemblage that sustains for the most part native material culture (Allard 2006:248). This configuration of mixed grave offerings is evidenced by the frequent use of iron blades attached to local bronze handles, inclusion of local ceramic vessels with Han bronze vessels, and local ornament types along with Han belt hooks (Wang Han 1998: 394).

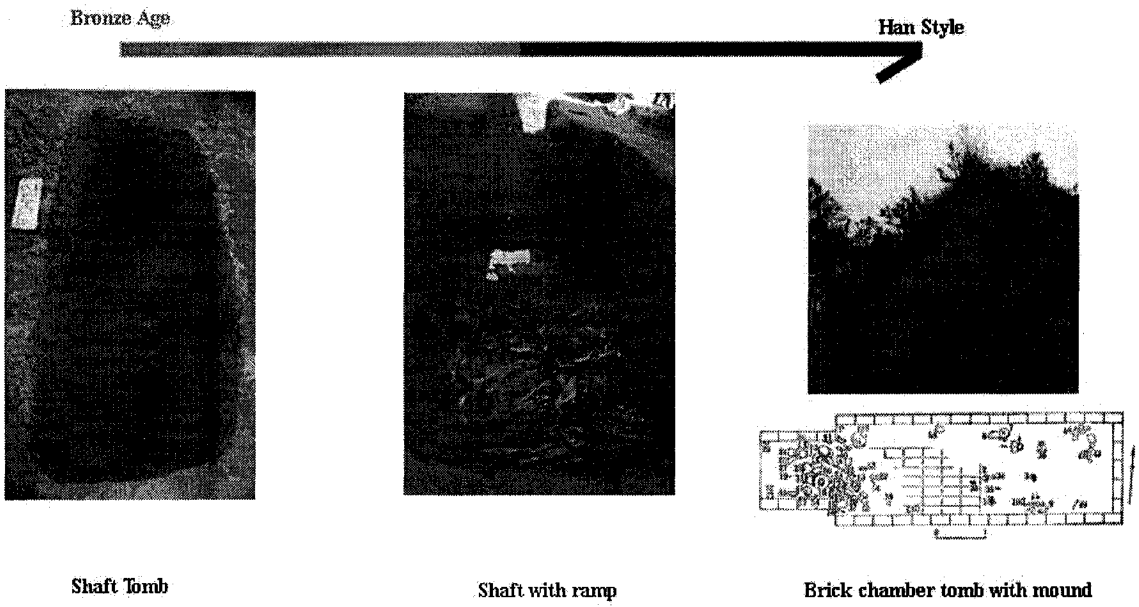


Figure 3.4. Progression of tomb types in Yunnan from native shaft tombs to brick chamber tombs (from left, Hengdalu in Qujing, Shuicheng in Huize, Luohanshan in Qujing).

Items associated with Han diplomatic exchange are found in the most opulent graves at these sites and likely served as status markers. In the Lake Dian area, the more opulent burials incorporate the objects in a manner consistent with Han usage: Han seal, bronze mirrors, serving ware and jade suit etc. For example, burial M6 at Shizaishan, which yielded the seal bearing the title 滇王之印"King of Dian", is also covered with a jade shroud or jade half suit, indicating recognition of a mortuary custom shared among

Han elites (Hong Kong Museum of History 2005:25). The inclusion of certain bronze and serving ware vessels (釜 *fu* cauldron, 甑 *zen* steamer, and 炉 *lu* censor) associated with Han elite consumption in the king's burial also indicates local emulation of Han habits (Jiang 2002:141). High status burials of the mid to late W. Han period (1st c BC) at the Lijiashan site in the Lake Dian region also include a similar array of Han bronze mirrors, serving ware and lacquer boxes. However, elite burials at these sites maintain local shaft tomb construction as well as the native high status markers such as the bronze drum, cowrie shell container and ornate weapons (Zhang 2001:37, Yao 2005). The grave assemblage of burial M69 at the Batatai site in Qujing, dated to the late W. Han – Wang Mang period, contains these diplomatic gifts and trade items but the grave assemblage likewise retains its local character.

Beginning in the early Eastern Han period, burials with an exclusively Han assemblage appear in increasing frequency in the Yunnan region. In contrast to native burials, the configuration of offerings in these graves follows normative Han practices, matching those patterns found in the Central Plains. These Han style graves can be broadly divided into two types: shaft pit tombs with ramps and brick chambered tombs. Shaft tombs are found both at existing Bronze Age cemetery sites (Lijiashan, Yangfutou, Xiaosongshan in Lake Dian area) as well as in distinct locales. The shaft tomb's unique construction method, which combines existing pit tradition with an attached Han style ramp, and its location in Bronze Age sites raise the possible identity of the tomb owners as 'sinicized' locals (Rode 2005:331; Archaeological Work Team of Guizhou Provincial Museum 1981:238). The Lake Dian area site of Yangfutou, which has yielded the most well documented Han burials, contains shaft tombs with attached ramps. The majority of grave offerings are Han style artifacts and follow a distinctly Han scheme. Adoption of Han sumptuary rules is most pronounced in the inclusion of dining tables in the burials, with distinctive kinds of Han food vessels arranged in the proper presentation order (see Figure 3.5). In addition, these burials also contain ceramic models of domestic and agricultural activity (houses, paddy fields and cooking stoves), bronze mirrors, and even a bronze horse, a repertoire of grave furnishing typical of elite Han culture. While native artifacts are nearly absent, a local form of a bronze stand still appears in some of these burials (Yunnan Provincial Institute of Cultural Relics and Archaeology 2005:733). At

the Zhongshui site in Weining, an area thought to be in the Yelang polity region, shaft tombs containing Han grave goods are capped with an earthen mound, a practice consistent with Han customs. The tomb occupant is identified by a seal bearing a personal name, but the grave offerings nevertheless include native bronze bell ornaments and ceramic vessels incised with what local archaeologists call early Yi minority script (Archaeological Work Team of Guizhou Provincial Museum 1981:239).

Chinese scholars propose that these burials might belong to some of the influential local families mentioned in the *Huayang Guozhi* text who are of non-Han origin but have achieved Han official roles (Archaeological Work Team of Guizhou Provincial Museum 1981). However, it is equally possible that these local objects could be a function of gift-giving practices wherein local individuals make offerings to Han magistrates or governors as documented in the Yinwan 尹灣 records (Lai 1999). In effect, the cultural identity of these higher status individuals cannot always be extrapolated based on the organization nature of the mixed offerings.

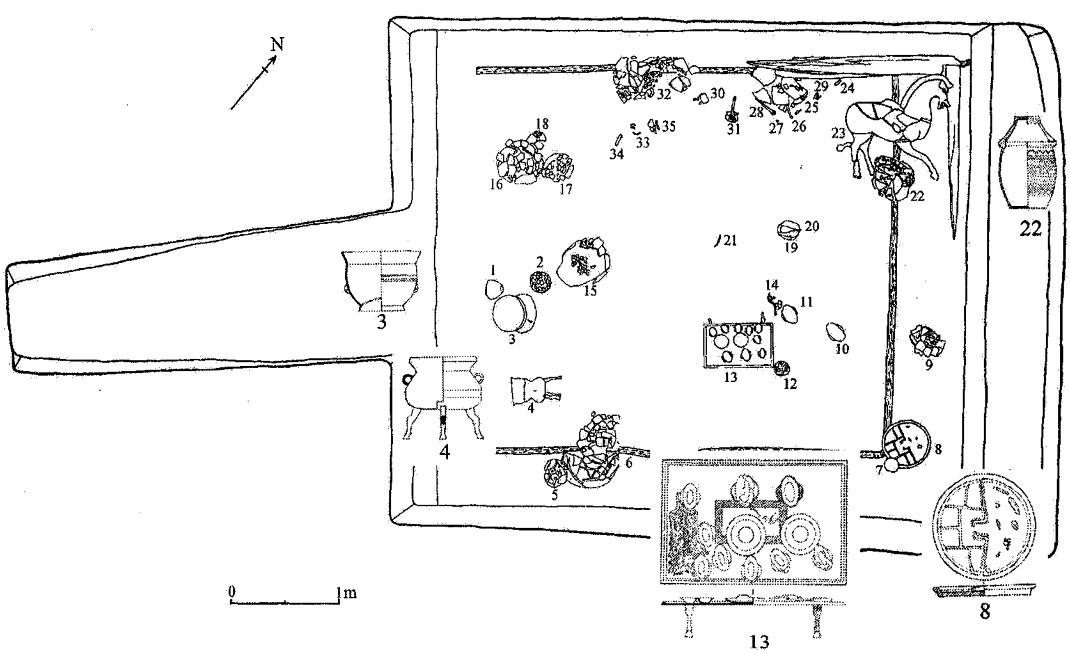


Figure 3.5. Burial M 268 from Yangfutou, a shaft tomb with ramp, and distinctly Han style grave furnishing.

Because multi-chamber brick tombs exhibit the greatest connection with elite metropolitan Han culture, the occupants of these tombs have been identified as culturally Han. They incorporate Han decorated bricks to construct single to multi-chamber tomb that are then covered with an earthen mound, referred to as *liangdui* type (see figure 3.4). These burials appear in the early E. Han and become increasingly more widespread in the region with approximately 400 documented mounds in eastern, northeastern, central and western Yunnan (Allard 2006:248). Unlike the earthen shaft tombs, these burials are spatially distinct from the Bronze Age cemetery sites. In the counties of Qujing, Dali, Zhaotong and Gejiu beginning in the Eastern Han period, brick design patterns approximate those in *mode* in the Central Plains (Yunnan Provincial Institute of Cultural Relics and Archaeology 2001, 2006). Grave offerings include Han objects following a distinctively Han scheme in its internal order. In addition, literacy and recognition of textual words appear to be important to the tomb occupant. At a site near Xiaguan city in Dali (Dali Prefecture Cultural Management 1997:63-75), the tomb brick bears a commemorative date set to the Han Emperor's reign date while at the Jiajia site in Zhaotong (Yunnan Provincial Museum 1962:399), an iron knife is inscribed with auspicious phrase in Chinese characters. Like the shaft type tombs, these graves bear the same trademarks of Han mortuary material culture (ceramic processionary figures, ceramic models associated with domestic and productive activities) but also include artifacts with textual value. Based on the architectural and structural affinities with Han practices, scholars have argued for the Han identity of the tomb occupants.

The above review of Han objects across the imperial borderlands underscores the complexities and problems associated with current frameworks for interpreting Han cultural influence. In general, the premise for inferring cultural identity is based on the proportional representation of Han material and grave treatments to native counterparts in the mortuary ritual. This approach is problematic on many fronts, notwithstanding the dependence on singular cases of elite graves. Most important, rather than treating mortuary customs as constitutive of social practice (see chapter 4), conventional approaches reduce a multidimensional phenomenon to a single dimension defined by cultural identity. Given the variable nature of imperial trade and goods circulation, not

all Han objects are necessarily markers of cultural distinction. Material meanings are contingent on existing consumption and value systems. When Han and local material and grave treatments are mixed in the same burial assemblage, the current framework is left to speculate about the presumed cultural affiliation of the individual. These problems raise the need for a logical approach to the analysis of Han material culture outside of the Central Plains.

SUMMARY

This chapter examined textual and archaeological materials to show the variability in Han imperial policy and cultural influence over a vast and diverse territory. *The different intensities of contact are reflected in the heterogeneous nature of the mortuary evidence documented along Han Empire's borderlands.* While current research from funerary contexts indicates that societies with extensive political ties with Central Plains states appeared to adopt Han institutions and customs more readily in comparison to societies with 'incommensurate' systems, this framework still falls short of providing a sufficient explanation for why these changes occur. Within the same contiguous region, the discovery of culturally heterogeneous practices in the mortuary ritual alludes to the dynamic nature of cross-cultural engagement. *However, because of the textual bias implicit in this current framework, cultural variability in the archaeological record is strictly interpreted in terms of degrees of assimilation, albeit without a standardized metric for prototyping Han-ness.* This conventional framework does not permit interrogation of the cultural processes at the center of the anthropological inquiry raised in chapter 2. Far from ignoring the impact or systematic nature of Han imperialism, this chapter points out that culture can not be conceived as a concrete and fixed construction (a trait *sensu* cultural historical paradigm) but is subject to social action. In the following chapter, I present an approach to the study of mortuary ritual in Southwestern China that logically integrates the archaeological data into a social analysis of the Bronze Age communities in their own right.

Chapter 4
The Archaeology of Mortuary Ritual

Following the discussion of mortuary practices along Han borderlands in chapter 3, this chapter aims to provide an archaeologically based theoretical approach to the study of mortuary ritual. The use of mortuary evidence for modeling culture change is a multi-stage process that presents its own analytical challenges. Notwithstanding the vagaries of the archaeological record (i.e., formation and post-depositional processes), mortuary ritual cannot be assumed to be a straightforward and complete accounting of the social reality. As a reminder, the cautionary example from chapter 3 illustrated that Han identity was not uniformly produced across all contexts. Just as not all social principles and representations find expression in the mortuary domain, the dimensions that do can be expected to produce some regularity in the archaeological record. However, unlike ethnographically derived approaches, there is no directly observable referent for explaining the social significance of the mortuary practice. In effect, the framework for a systematic mortuary archaeology follows an inductive logic whereby the patterns of differentiation in the mortuary program must be first identified. These patterns of funerary differentiation contribute toward a general description of the primary dimensions of variation at the synchronic level. In this study, a comparison of these synchronic descriptions at the diachronic scale provides the basis for modeling patterns of culture change.

This chapter presents an outline to the theory of mortuary archaeology that sets the logical foundations for the research study and which will enable the investigation of culture change in the mortuary domain. To fully understand the theoretical imperative advocated here, section 1 discusses the issues at the center of the theoretical debate surrounding mortuary archaeology. Section 2 presents the logical basis for mortuary

reconstruction and lays out the principles for identifying horizontal and vertical dimensions of social variability. Following this framework for social analysis, section 3 proposes the methods and analytical approach for the evaluation of social and cultural change at the diachronic scale. Section 4 models the expectations to be found in the mortuary ritual associated with each process of cultural change (*acculturation, transculturation, creolization*, and *resistance*).

THEORETICAL APPROCHES TO MORTUARY ARCHAEOLOGY

Contemporary approaches to the study of mortuary ritual in anthropological archaeology owe much to the foundations laid by Arthur Saxe and Lewis Binford. In establishing a causal association between mortuary ritual and social practice, the Saxe/Binford approach provided archaeologists with an explanatory framework through which mortuary evidence could be channeled toward social inference. Adopting Goodenough's work on role theory, the Saxe/Binford approach conceived individual personhood (persona) as comprised of *social identities* and *personal identities*. Age, sex, relative position, and group affiliation contributed to the range of *social identities* while *personal identities* consisted of the rights and duties owed to the individual based on personal position or rank (Goodenough 1965:4-15). Based on this premise, Saxe/Binford reasoned that specific mortuary treatments should accord with an individual's relative position in life and that the complexity of the overall mortuary ritual should vary with the complexity of the society (e.g., social structure). While the Saxe/Binford research program was able to identify regularities between the dimensions of the mortuary ritual and the overall social structure in cross-cultural ethnographic cases, later applications of the approach to the archaeological record were not always tenable.

The problems of its direct incorporation into archaeological study stem from the disjuncture between ethnographic and archaeological observations (O'Shea 1996: 8). The archaeological record represents a palimpsest of activity, while ethnographic observations focus on moments of individual action and are subjective descriptions that do not account for the wide variability encountered in the archaeological context (McHugh 1999:12). For instance, Binford (1971) and Tainter's (1974) examination of the role of grave goods in expressing different social statuses across different cross-

cultural ethnographic samples produced contradictory results. A related problem is the direct incorporation of Saxe/Binford approach as a means for identifying social taxonomic types based on ethnographic descriptions of subsistence economy (O'Shea and Zvelebil 1984). The approach indirectly provided the analogical means for the discovery of dubious types in archaeology (Levy 1989). Rather than address the totality of the mortuary data, certain elements of the ritual are extracted to support the type profiles (McHugh 1999:3). The oft-cited example is the wealthy infant grave as an indicator of ascriptive status that characterizes ranked societies.

It is partly on this basis that post-processualists have attacked the Saxe/Binford approach. However, their criticism has not been directed toward the lack of systematic applications, but instead focused on the "representationist" tendencies of the approach in its later permutations. In assuming that mortuary ritual is principally a direct reflection of social structure, the post-processual critique asserts that the Saxe/Binford paradigm overlooks the ideological and symbolic basis of mortuary ritual. Tainter's model of informational redundancy has been criticized by Parker Pearson (1999:75) and Hodder (1980) for its reduction of mortuary ritual to simply a measure of complexity from egalitarian to hierarchal forms. Likewise, Tainter's study of social rank based on a model of energy expenditure in funerary treatments has also been criticized on faulty conceptual grounds (Parker Pearson 1999:31; see also Cannon 1989). In citing the case of ascetic funerary trends in Victorian England, Parker Pearson (1982) argues that burial complexity could represent an inversion of social class structure, as cremation was popular among the upper class while the lower class spent more on funerary display. Thus, in viewing mortuary ritual distinctively as a pathway for individual action through which ideological constructs are either reified or challenged, the post-processual critique argues against a necessary direct association between social reality and funerary practice.

However, Parker Pearson fails to acknowledge that the observed inversion in funerary display in 19th century England is contingent on an understanding of the hierarchal nature of Victorian society, without which the mortuary ritual would have limited interpretative potential. It is particularly relevant to note that neither the works of Tainter (1980) on the Middle Woodland, or Peebles and Kus (1977) on Moundville or Brown (1971) at Spiro based their social reconstructions solely on the mortuary context.

In all three cases, some understanding of settlement patterns provided evidence to reasonably corroborate and constrain their social analyses of the mortuary data. In effect, Parker Pearson is not entirely comfortable with a disavowal of the sociological basis of mortuary ritual himself. He writes,

> [Mortuary] ritual is one form of customary practice – in which participants are aware of socially agreed conventions from brief matters of politeness to long and elaborate religious rites – in which procedure is prescribed and explicit even though meanings may be ambiguous, mysterious or implicit (1999:194).

Even this caveat – the potential for multiple and subjective meanings – is not inconsistent with the Saxe/Binford framework. Binford (1971) stated that funerary symbolism was influenced by the decisions of the mourners and in particular by what they conceived as desirable and appropriate. Given this premise, the theoretical framework does not preclude the potential for individuals and groups to manipulate funerary conventions. In no way are individual and group or collective actions assumed to be synonymous either. For example, O'Shea's examination of Maros mortuary sites distinguished female individuals whose funerary treatments revealed a disjuncture between their biological sex and cultural genders, highlighting a unique social position that departed from normative gender constructs (1996:319-20).

A related problem associated with the application of the post-processual approach is in determining the relevance of ideological construct(s) to evaluate the mortuary data. While conflicting relations are inherent to class, gender, and ethnic ideologies, other ideological constructs beyond that of dominance and resistance must also be considered. Without a rigorous means to evaluate between ideological approaches, all dimensions of the burial ritual have the potential to be manipulated in some way and these need to be studied in their own right. For example, in a study of British and Scandinavian Neolithic barrow burials, Shanks and Tilley argue that symmetrical bone sorting represented a community wide attempt to leveling asymmetrical power relations (1982:152). In comparison, Hodder's (1986) study of the same barrow burials concluded that the symmetrical sorting of bone parts was alternately structured by ideological oppositions between male and female genders (McHugh 1999:16). When the ideological frameworks appear to be equally plausible and simultaneously incompatible with the mortuary evidence, the archaeological study faces the challenge of equifinality.

This last point carries specific implications for the dissertation research. If the theoretical framework were to take an explicitly ideological orientation, then mortuary ritual is automatically implicated in the conflictual conditions presented by Han imperialism. Every dimension of the mortuary ritual would have to be equally considered for its symbolic role in reaction to the imperial ideology, assuming that imperial ideology is itself a stable and uniform paradigm. According to this framework, the introduction of Han imports into the mortuary assemblage would implicitly connote power relations that are intuitively imperial. While it is important to acknowledge that mortuary practice has real potential to become culturally and socially symbolic, it is equally important to consider the reverse – the symbolic neutrality or dormancy and conservatism of these practices (c.f. Robb 1998). Stated otherwise, the inclusion of Han objects into the local mortuary display does not necessarily mean the assimilation of other cultural paradigms but perhaps an extension of existing consumption practices.

As emphasized in chapters 2 and 3, cross-cultural interactions encompass varying intensities of political and economic entanglement and do not represent a uniform social phenomenon. In particular, the survey of Han texts underscores the very complexity of imperial forms of integration. The far reaches of some provinces meant that the Han imperial government ruled with limited authority and relied on multilateral collaboration reliant on ideologies of inclusion or mutuality rather than of domination. The conflictual basis of an ideology based approach, however, precludes these considerations and the variable probabilities of imperial rule. In foregrounding relations of dominance and control, the study may risk being pigeon-holed into the uni-directional paradigm of culture change that it currently aspires to move beyond.

LOGICAL BASIS OF MORTUARY ARCHAEOLOGY

Far from discrediting the importance of ideology in cultural practice, the preceding discussion simply intended to underscore the complexity of dealing with mortuary data in archaeology. In adopting a theoretical tenet without prior recourse to data, the archaeologist can be forced to rely on *a priori* assumptions about the culture under study to then generate *post-hoc* social interpretations of the mortuary evidence.

Just as intrinsic meanings should never be presumed in other archaeological contexts, the mortuary domain should also be subjected to the same logical process of evaluation.

Other than to acknowledge that burial rites are meaningfully constituted by individual and collectively informed decisions, the starting point of this theoretical approach assumes that mortuary ritual reflects a real but incomplete version of society. Death is a universal aspect of the human experience. Confronted with the death of an acquaintance, the living must respond to this social disruption in culturally appropriate ways. All societies have a set of parameters and procedures concerning the 'proper' disposal of the dead (O'Shea 1986:33). The importance of this social principle should not be overlooked since it is precisely these collectively recognized standards which circumscribe the mortuary ritual and simultaneously constrain the range of social behaviors in the mortuary practice.[1] By extension, this regularity in the organization of mortuary practice is expected to produce a range of formal variability in the mortuary record. This acknowledgement of the *behavioral nature* of mortuary ritual is critical. As a starting point, mortuary archaeology is not theoretically "tethered" to and reliant on: ethnographically derived generalizations, or presumed kinds of subjective meanings.

Individuals, in dying, participate in the generation and production of this cultural behavior. The cemetery, in effect, represents multiple iterations of these discrete funerary activities. The consistency and repetition of these activities generate the physical patterning archaeologists encounter in the material record. These patterned treatments can appear as formally contrastive, complementary or hierarchical in nature. At the outset, it is these regularly appearing patterns that are meaningful and the starting point for a logical study of mortuary ritual. Because these patterns are generated from intentioned actions of individuals and members of a community, they further provide the basis for a social reconstruction. In other words, assuming that the vagaries of the archaeological record (i.e., formation and post-depositional processes) are accounted for, the observed patterning or mortuary variability is real and socially significant.

This detected patterning reflects mortuary treatment that is relevant to the specific identity of the individual. Recalling Binford and Saxe's basic theoretical tenet, the

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[1] In addition, this premise has important implications for the investigation of culture change. Specifically, the collective recognition of these rules and procedures amounts to a group tradition, with direct implications for group membership.

mourners play an important role in determining the composite of identities to be recognized and memorialized at death. Thus, the specific treatment accorded an individual in death will relate to that individual's specific social relations and life history. In response to the post-processual critique, there has to be a sociological basis to the pattern of mortuary differentiation, since social differences cannot be arbitrarily improvised. They have a basis in social? reality.[2]

At the most general level, the most obvious and perceptible qualities defining individual identity in a society are determined by two potential social criteria: the categories that are organized along *horizontal* and *vertical dimensions* (Binford 1964, Brown 1971; O'Shea 1986:45-49). By virtue of being a member of a society, every deceased individual qualifies for *distinct categories* that are differentiated along these two social dimensions. In general terms, the *horizontal dimension* encompasses a distribution of identities along an intrinsically unranked order. Different definitions have been applied to *horizontal* distinction. In general, the term has been loosely defined as "kin organization", descent or territorial groups, societies that are non-kin based, or even factions (O'Shea 1981; Chapman 1980; c.f. McHugh 1999:40). This study takes an even broader interpretation in adapting the term to refer to social categories that are unranked or homologous in nature (age, sex, and kin categories). In the mortuary program, this dimension can be expected to be distinguished by types of mortuary treatments that are of equal effort expenditure.

The *vertical dimension* encompasses a distribution of categories along a ranked order such as social status, "class", offices, and etc. In the mortuary program, the concept of energy expenditure (Binford 1971; Tainter 1978) has been commonly applied to detection of vertical distinctions, whereby discrete levels of energy expenditure are used to differentiate between ranked statuses. *Horizontal* and *vertical dimensions* will inherently cross-cut each other (Peebles and Kus 1977), producing patterns of differentiation that distinguish members or social units within each community.

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[2] This point draws directly from Durkheim's thinking on the sociological basis of collective conscience and belief systems. According to Durkheim, "social life comes from a double source, the likeness of consciences and the division of labor" (1933:226). In other words, the social and economic differentiation of society and it members are supported by a degree of correspondence in the collective conscience.

To achieve a social understanding of the mortuary patterning follows a series of intervening logical steps, which will be elaborated on below. . As a starting point, every observed mortuary patterning (artifact and grave treatment) is examined against distinct referents (pervasiveness, age, sex, and spatial distribution). Patterns of differentiation and correspondence between treatments and referents help define the social identities or units being marked, in addition to the social dimensions configuring these roles. Once general descriptions of the mortuary program are specified is it possible to investigate propositions about the research problem of culture change.

METHODOLOGICAL FRAMEWORK

While the particular methods and procedures used are fully described in the site chapters, an overview of the four stages of the basic analytical approach is presented here. The preliminary stage in the analysis is to determine the chronological ordering of the graves. Stage 2 identifies in each phase the configuration of material offerings representative of the social units and identities mentioned above. Due to poor soil preservation, the absence of biological data complicates attempts to assess sex and age referents. The description of the social identities will therefore primarily rely on the formal nature of the grave assemblage, while the use of grave length as an approximate measure of biological age is attempted in stage 3. Stage 3 independently evaluates the distribution of variable kinds of grave treatments to identify normative and differentiated patterns. These patterns are further compared across the two cemetery locations to further strengthen their identification in the mortuary program. Stage 4 examines the correspondence between material offering and grave treatments to determine normative and differential treatments and whether they express a social distinction structured by *horizontal* or *vertical dimensions*. This social portrayal of the mortuary community provides a preliminary understanding of the organizational nature of Bronze Age societies at the synchronic level. These synchronic patterns can then be contrasted at the diachronic scale to model the nature of cultural change.

Stage 1: Chronological order

In establishing *chronological* phases, step 1 of the analysis aims to determine the contemporaneity of burials in the mound that are representative of the temporal units. To

establish the chronological arrangement of the burials, I rely on the burials' stratigraphic position in the mound (grave opening's depth below datum and associated construction layer), superimposition and absolute dates. Additional lines of evidence (morphological attributes of ceramic and bronze artifact types and grave orientation) will also be independently evaluated for separation between construction sequences. While the analytical problems associated with using these lines of evidence as chronological measures will be discussed in the site chapters, the assumption follows that if multiple indicators (consistency in artifact morphology and grave orientation) remain constant over successive sequences, then there is support for grouping the construction episodes into the same "behavioral" phase. Where multiple indicators diverge in the sequence, then there is support for a phase break.

Following the identification of these construction sequences, I compare the sequences with historically known periods of pre-contact to post-contact phases using available radiometric dates and numismatic dates. Radiometric and thermolumunescence (TL) dates from graves in the lower, intermediate, and top strata are used to establish temporal brackets. An attempt to resolve the different resolution between the two dating methods is discussed in chapter 5. Based on instances of superpositioning between dateable deposits, individual burials and construction sequences will be placed into distinct chronological phases.

Stage 2: Material Treatments

The first step in this analytical procedure examines the distribution of individual object types within each artifact "raw material" class (ceramics, bronzes, iron and stone implements). The distribution of each identified type is evaluated against its pervasiveness to determine which objects are the primary units of mortuary offering. Associations between individual vessel and implement types are then examined to determine the configuration of composite sets (e.g., single bowl versus feasting set, one weapon versus a weapon outfit). This step determines the most intuitive units of analysis by reducing the number of artifact dimensions.

The final step in the evaluation of material offerings is to determine the overall configuration of grave assemblages. By examining co-variations between distinct

offering types across all artifact categories, the analysis will identify the primary dimensions of differentiation in artifact treatment. Which material assemblages represent the normative versus distinctive types of treatments? Which objects never co-occur? Which objects must always co-occur? The evaluation of this patterning may show distinct axis of variability that separate the composite types and isolate the artifact configurations that mark particular identities. An understanding of the rate of occurrence of these material offerings provides insight into their potential significance as symbols of qualitative distinctions. The statistical procedures adopted for these analyses are discussed in the site chapters.

Stage 3: Grave Treatments

Independent of the assessment of material offerings, different grave treatments (orientation, spatial location, grave length, grave size, and tomb architecture) are examined following the same analytical framework for material treatments. A primary goal is to assess normative versus distinct treatments based on the distribution frequency or pervasiveness of each possible type. In the absence of biological data, however, grave treatment also provides important referents to the mortuary program. As mentioned earlier, the detection of grave length classes offers an alternate means for assessing age differences. Neutral types of grave treatments (orientation and spatial location), which vary independently of energy expenditure, are explored as potential indicators of horizontal differentiation. Grave orientation manifests a physically compelling way for individuals to symbolize shared or contrastive identities. In this research, because grave orientation in Han mortuary practices must consistently follow a north-south axis in accordance with specific cultural beliefs about the afterlife, the detection of orientation changes in native practices can potentially provide an important line of evidence for inferring cultural patterns of change.

Recalling the work of Goldstein (1981), the detection of spatial patterns in the distribution of graves may allude to social organization along lines of shared group identity. At the most basic level of perception, the spatial location of graves would be visually apparent for each phase such that individuals would have an awareness of available versus occupied space in the cemetery. If the availability of space is the only

criteria for grave location, then the community would place the individual graves anywhere, leading to a random pattern of distribution. The detection of non-random spatial distribution showing discrete patterns of segregating individuals by space is assumed to be an active way for symbolizing group differences.

The procedures for analyzing grave treatments will be discussed in the individual site chapters. In general, the detection of spatial patterns in each cemetery will first rely on visual assessments. If discrete spatial patterns are visible, then a nearest neighbor (NNI) spatial statistic will be conducted over the burial group to assess the strength of the spatial associations.

Grave size and tomb construction are analyzed as variables representative of potentially different levels of energy expenditure. Following the work of Binford (1971:225), the extent of public disruption associated with a funerary event is a reflection of the number of duty status relationships owed to the deceased. Greater corporate involvement can reflect increasing levels of energy investment toward funerary elaboration, with the size and kind of grave structure being aspects of the mortuary ritual that can most unambiguously index effort inputs. The differential rate of occurrence of these tomb types provides another independently observed means of describing overall social variability. And according to Tainter's (1978:125) model of expenditure, the occurrence of distinct levels of effort expenditure can reflect distinct ranks or vertical distinctions in the society.

Stage 4: Identifying Horizontal and Vertical Dimensions of Social Organization

While the preceding three stages outlined a framework for the analysis of mortuary variability, this stage presents an idealized framework for *describing* the sources of that mortuary variability. By examining the correlations between the material and grave treatments, the goal of this stage is primarily to identify the correspondence of material distinctions with their social referents. In effect, this framework attempts to discern whether the material variability is organized along the *horizontal* and/or *vertical* dimension by specifically drawing upon the archaeological correlate of energy expenditure:

> If distinct material treatments converge with formally increasing levels of energy expenditure in funerary cost, then a *vertical category of social distinction* is likely being expressed.
>
> If distinct material treatments and grave orientations appear to be spatially distinct, then a *horizontal category of social distinction* may be represented.

Simultaneously, these two dimensions may cross-cut each other, thus producing vertical statuses that are primarily associated with specific groups (c.f. Peebles and Kus 1977 discussion on *subordinate* and *superordinate* statuses). In explaining the social basis contributing to the patterns of differentiation, this analysis also addresses the social content and meanings possibly underwriting individual statuses. Specifically, the isolation of material symbols means that the formal qualities of certain grave objects contain intrinsic meanings with interpretative potential. From here, the reconstruction of the mortuary symbolism amounts to a preliminary but detailed portrayal of the Bronze Age communities during each contemporaneous phase.

MODELLING DIACHRONIC PATTERNS

With a social description of the Batatai and Hengdalu communities outlined for each phase, section 4 forwards a model to analyze the processes of culture change (*acculturation, transculturation, creolization, and resistance*) presented in chapter 2. As mentioned earlier, the collectively recognized prescriptions and proscriptions underwriting mortuary rituals implicitly define group membership. Thus, the basic premise of this model operates on the assumption that because mortuary ritual is implicated in social and communal life, any political or economic re-alignments to the social fabric of these communities may anticipate re-adjustments in the mortuary ritual. While the potential for these societies to choose other contexts for expressing group/cultural identity must be considered, the investigation of diachronic patterns at the two cemetery sites can hopefully serve as a control. By investigating mortuary patterns at the diachronic scale, this study can identify internal social shifts that may be associated with the effects of cross-cultural interaction. *In other words, this analysis investigates the cultural dimensions of social change in the funerary ritual.* As such, the diachronic analysis of culture change necessarily involves two different levels of investigation: the

determination of the structure of social change, and the specific categories marking these structural changes.

The modeling of culture change in the mortuary context thus relies first of all on the tracking the organization of *horizontal* and *vertical* statuses through successive phases. To what extent do patterns of social differentiation correspond or diverge from earlier periods? Earlier discussions of imperial cases in chapters 2 and 3 indicate that *horizontal* and *vertical* dimensions of social organization can either be expanded upon or truncated under variable contexts of incorporation.

Once the structure of these social shifts is identified, the analysis can proceed to examine the role of Han mortuary treatments in configuring these dimensions of social differentiation. How Han objects create differentiated offering types may reflect cultural shifts in the social organization. The influence of Han cemetery arrangements, orientations and tomb structures on local practices can indicate the impact of Han social structures on native communities. Because both artifact and grave treatments have the potential to become cultural referents, the manner in which the two treatment types converge or diverge in generating patterns of social differentiation provide evidential (or inferential) basis for modeling the variable forms of culture change. As a cautionary note, the identification of culture change cannot rely solely on one dimension of mortuary treatment as assumed by the conventional frameworks presented in chapter 3. The differential distribution of these patterns at the individual, group and community level has direct implications for modeling the intensity of culture change.

In this study, both internal (local) and external sources of social "stress" are important, though the external effect associated with cross-cultural interaction is specifically modeled here. The possible social transformations modeled in this study range from *acculturation*, *transculturation*, *creolization* and *resistance*, with each process implicating culturally specific kinds of social transformation. These differential processes and their material and grave treatment correlates are outlined in figure 4.1.

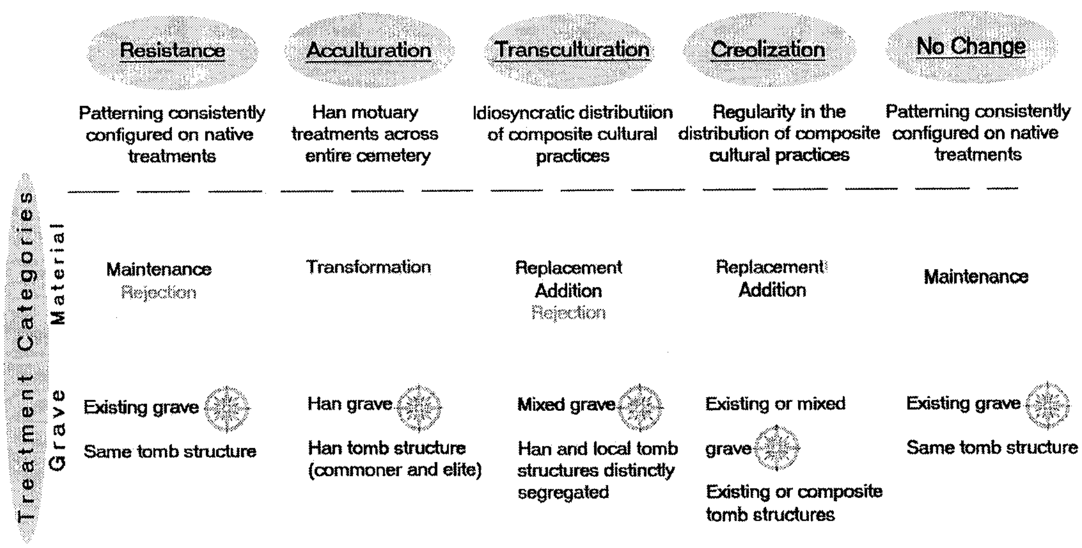


Figure 4.1. A model for studying culture change and the expected archaeological correlates. Material treatments consist of the five artifact processes and grave treatments consist of grave orientations (denoted by legend symbol) and grave structures.

Analysis of Material Treatments

To evaluate potential shifts in material treatments, I follow Rogers' (1990:105-109) analytical framework of five proposed artifact processes. Rogers' framework defines a causal link between cross-cultural interaction and material patterning by specifying the variable modes of exchange and their expectations in the artifact assemblage. Below is a summary of each artifact process and their implications for approximating the nature of culture contact and change. Figure 4.1 shows conditions under which each artifact process is expected to occur.

> *Maintenance*: Native artifact assemblage undergoes relatively little change with most items in specific functional classes being maintained. Stylistic composition may vary but in general is limited within a consistent range. Implicit to this process is the continuity of the material system, where internal coherency is not subject to external interruptions.
>
> *Replacement*: The overall composition of the material assemblage remains unchanged, but native artifact types are replaced by counterparts of foreign origin. Implicit in this process is continuity of the native consumption system, which is nonetheless open to certain kinds of change, including non-intensive exchanges.
>
> *Addition*: Native material assemblage experiences the addition of foreign objects with no native counterparts. This process suggests that "a variety of pressures or patterns of social usage are at work" (Rogers 1990:107), introducing new

consumption values that affect the integrity of the artifact system. While the cultural system remains intact, the process does indicate internal flux, especially if the changes pervade multiple realms of society. The pervasiveness of the process may presage social change.

Rejection: Native cultural constraints are put on some newly introduced foreign goods or previously accepted objects, limiting the circulation of those items in the material assemblage. Implications for this process are that the society "is maintaining a high level of cultural coherency, is undergoing relatively little exogenous stress or has adapted mechanisms for coping with various pressures" (Rogers 1990:108).

Transformation: The artifact assemblage undergoes significant changes from earlier patterns. Artifact categories are severely modified or eliminated altogether and replaced with nonequivalent forms. Implicit in this process is that society has undergone a redefinition of economic, social, or symbolic relations under intensive exogenous forces.

Rogers' framework offers a systematic means for evaluating the symbolic dimensions of Han objects in the consumption system. Because foreign objects may not necessarily connote cultural distinctions, one cannot uncritically accept their token value in the mortuary assemblage. In contrasting structural differences in material incorporation, this framework redresses the tendency in earlier approaches to assume that the occurrence of foreign objects coherently manifests culture change. Instead, objects participate dynamically in the consumption system.

Analysis of Grave Treatments

As discussed in chapter 3, Han grave treatments represent a discrete set of practices that appeal to distinct cultural beliefs in cosmology and the afterlife but which also reproduce the social hierarchy. Grave treatments, in particular the alignment of the body and the tomb structure, can therefore serve as potential cultural referents. Depending on the individual's social class, graves can be placed either in lineage cemeteries as observed for elite and official mortuary practices, or in mass cemeteries as observed for "commoners" and even conscripts (Wang 1982). In other words, the segregation of cemetery space is linked to social differentiation. In addition, Han burials are often distinguished by brick-lined single or multi-chamber structures. As mentioned

in chapter 3, this type of tomb construction symbolizes house structures accompanying the deceased.

While these grave treatments carry distinct symbolic meanings within the Central Plains tradition, their detection in the Qujing region cannot be assumed to be a direct cultural referent. Like the application of Rogers' evaluative framework to the above material treatments, Han grave treatments must first be examined for their pervasiveness and structural relations relative to the existing program of grave treatments. Once the distribution of each grave treatment type is determined for the individual mound groups, the rate of their co-occurrences is examined. For example, do Han grave treatments (orientation, grave structure, and spatial location) all converge or are they dispersed across the entire mortuary group? Depending on the differential adoption of Han mortuary norms and their spatial distribution within individual cemeteries, grave treatments may provide a separate means for modeling the nature of cultural change. More specifically, if Han orientations and tomb structures are spatially discrete, then it is possible that grave treatments are operating as cultural markers, distinguishing particular horizontal groups based on cultural affiliation. Alternately, if Han and native treatment types overlap or are both incorporated across the cemetery group, then the cultural implication of the mixed grave treatment is more ambiguous. Depending on the pervasiveness and spatial distribution of these mixed grave treatments, these mortuary practices may be configured by other social dimensions. These distinct types of grave treatments need to be further evaluated with types of material treatments to determine the social principles underlying their configuration.

In summary, the detection of Han grave treatments does not provide a straightforward accounting of cultural affiliation but by comparing their correspondence with spatial and material dimensions of treatment, it is possible to isolate trends reflective of cultural distinction.

Expectations in the Mortuary Domain

Having established an inferential framework for incorporating material and grave treatments to model culture change, I outline its expectations in the archaeological record. The model attempts to account for the full variability in the archaeological record and to

provide a systematic account of the structural relationship between the behavioral correlates. Specifically, change in one treatment category alone cannot substantiate the nature of culture change. This is especially true of frameworks solely reliant on material indicators, which assume that foreign objects are unambiguous symbols of culture. As noted by Roger's framework, foreign artifacts can be incorporated as replacements of existing counterparts. This process of incorporation does not necessarily carry cultural implications.

By evaluating the dimensions of cultural variability through a comparison of material and grave treatments, this model anticipates a more rigorous means to evaluate culture change in the mortuary record. I expect patterned correspondences between different grave treatments and artifact processes that distinguish the five structural forms of culture change. Material and grave treatments will be differentially incorporated in the mortuary ritual and differentially patterned at the individual, group and the community level.

In the discussion below, I describe each potential form of culture change ranging from no change, composite cultural formations to extreme cultural shifts and their correlates in material and grave treatments. Figure 4.1 presents a diagram of this working model.

No cultural change

When cross-cultural interactions are informal and of short term duration, interacting societies remain independent and thus we expect no change. Thus, the *maintenance* of material and grave treatments is to be expected. Given the continuity of cultural integration, the consumption of Han objects obtained through exchange is expected to conform to existing guidelines. Foreign objects may *replace* native counterparts in the mortuary assemblage as equivalents but are not incorporated as symbolic markers. *Inter-site variations may exist, but the overall configuration of horizontal and vertical distinctions should remain consistent within each site.*

Composite Formations

Under more extensive forms of interaction, communities become increasingly drawn into political and economic relations with the Han State. Depending on the size

and sociopolitical organization of each community, these interactions can lead to different degrees of structural dependencies with the Han State. Different intensities of cultural entanglement contribute toward the emergence of *mixed cultural practices* in the local mortuary ritual ranging from *creolization* to *transculturation*.

Creolization If the community is indirectly administered by Han provincial authorities, one would expect intercultural exchange to have limited impact on existing institutions as both imperial and local groups attempt to strike a mutual basis of communication and cultural intelligibility. Under this situation, distinct mixed practices may emerge to adapt and facilitate cultural plurality (e.g., hybrid languages). Both sets of cultural practices are considered to be *homologous counterparts* and open to *interchangeability*. Under this condition, *creole* practices may emerge and present a configuration of Han and existing cultural forms that primarily conform to existing social patterns.

Specifically, social patterns are expected to sustain existing vertical and horizontal dimensions of differentiation. However, corresponding artifact and grave distinctions may be configured on culturally mixed assemblages. It is expected that Han objects with existing counterpart types will *replace* existing forms in the mortuary assemblage. However, growing economic interactions may also promote the *addition* of a limited range of Han objects with no antecedent equivalents in the mortuary assemblage. Grave orientations and spatial distributions are expected to conform to existing guidelines but Han grave structures may be appropriated to elaborate on existing status differentiations. These composite mortuary configurations should be regularly observed across the entire cemetery and not occur as incidental cases.

Transculturation If imperial rule becomes more direct and permanent (e.g., colonization), then it is expected that the integration of local and Han subjects would create greater structural complexity in the cross-cultural interaction. The formation of a culturally diverse community presents not only a greater frequency of interaction but the provincial political economy would create structural dependencies between the two groups. In mobilizing regional level agrarian and craft production for the state, the imperial system also generates opportunities for local and Han groups to participate in the

wider trade networks. These opportunities create conditions for change to the existing social structure. *In particular, vertical dimensions may be expanded upon to create greater differentiation in the ranks of local officials and elites.* Certain individual and factions may gain wider influence under the imperial system while other individuals occupying other social roles are excluded. *Horizontal structures may likewise shift depending on the organization of domestic and production units under the imperial economy.*

Attempts to network across this culturally diverse community require a nuanced awareness of cultural difference and cross-cultural meanings. Thus, social practices and action will present the widest variability and dynamism as individuals and groups attempt to mediate across two different cultural frameworks in the process of crafting and adaptation to the imperial community. The cultural nature of social action and reproduction means that the mortuary ritual may be intentionally configured on a range of mixed composite practices. However, these composite practices will vary at the individual, group and community level depending on how each member or social group is integrated into the imperial system.

Within the configuration of material treatments, Han objects may be *added* to the mortuary assemblage. Depending on the congruity of specific roles and statuses in the imperial social system, Han objects may either *replace* or be *rejected* from the grave offering assemblage. The use of Han artifacts in the configuration of social distinctions will likely depend on the differing interests of specific social groups and individuals. For example, local elites may adopt Han social symbols (*replacement* artifact process) in promoting individual status in the provincial government.

Grave treatment forms are also expected to show variable patterns across the community. Some social groups may adopt Han grave orientations and fashions while others continue to follow existing cultural standards. By comparing the correspondence between these two categories of treatment, a detailed understanding of *transcultural* adjustments will be possible.

Extreme Shifts

If the impact of imperial absorption strains the structural limits of a local community, then two extreme cultural formations may develop (*acculturation* and *resistance*). Depending on the sociopolitical organization of local communities, communities can respond to more direct and coercive forms of imperial integration by *resisting* Han incorporation. However, if the local community lacks the organizational means to mobilize collective revolts, then *acculturation* to the imperial system may present a viable response.

<u>Acculturation</u> If imperial incorporation has created entrenched structural dependencies between local communities and Han State, then local groups may not be able to sustain political and cultural autonomy. In particular, if existing staple production and trade networks are disrupted under imperial rule, then local groups may be compelled to assimilate to Han practices in order to participate in the provincial political economy. Given the salience of Han imperial rule, it is expected that becoming a Han subject would lead to a re-configuration of existing horizontal and vertical dimensions of social organization according to Han structure. Material and grave treatments are expected to both converge on Han referents. The artifact processes characterizing this formation process consist of a *transformation* of existing mortuary assemblages to offering sets configured strictly of Han objects.

Depending on the scale and sociopolitical organization of the incorporated community, acculturation could lead to the pacification of local groups and reduction of existing social organization to Han agrarian or commoner patterns. In this scenario, it is expected that the mortuary ritual will mirror Han commoner practices (see chapter 3). Or, imperial rule may re-structure existing social organization to dovetail with Han administrative structures thus expanding vertical dimensions of differentiation. The artifact and grave treatments distinguishing high social distinction would consist of brick chambers and the sumptuary paraphernalia types mentioned in chapter 3. Social differentiation may be distinctly ordered according to Han customs, with commoners and elites being segregated into two locations and possibly further spatially divided according

to ranked lineages. These cultural shifts would be regularly patterned across individual, group, and intra-cemetery scales.

<u>Resistance</u> If the cross-cultural interaction strains the structural limits of a local community, then its members may also resist imperial influences and attempt to promote group differentiation through mortuary ritual. Both material and grave treatments are expected to become active cultural referents in the process of group boundary formation. Han objects may be *rejected* completely in favor of existing categories of offerings. The *rejection* of Han objects could result from cultural constraints placed on the acceptability of foreign objects. Likewise, grave treatments are expected to conform to existing configurations. In particular, mortuary treatments that distinguish social statuses with communally based roles and positions will elicit the strongest regularity in patterning. It is expected that these patterns will be consistently reproduced at the individual, group, and intra-cemetery scales.

Depending on the extent of the external disruption to the community, the attention and resource demanded for staging mortuary ritual may not be entirely supportable. Thus, it is also possible that the mortuary program may become more simplified, showing a reduction of the previous trends in funerary elaboration and truncation in the range of social distinctions.

As the proposed expectations reveal, the mortuary treatments are not necessarily homogenously patterned under each form of culture change. In detailing the full range of probable combinations of mortuary treatments, this framework attempts to provide a systematic way to model these processes of culture change. Besides exploring these diachronic trends at the intra-cemetery level, the comparison of social transitions across cemetery sites may further help strengthen our cultural inferences. More specifically, if the two sites document similar structural transformations in the mortuary patterning, then the determination of culture change can be supported with greater confidence. An examination of inter-cemetery patterns will be presented in chapter 9.

SUMMARY

In chapter 3, I demonstrated the limits for interpreting culture change when expectations for mortuary data are: 1) directly based off of textual accounts and 2) assumed to be unequivocally marking cultural identity. In a region where the dimensions of Han imperialism are poorly understood, a framework to assess the nature of cultural transformation must take into consideration existing patterns of social organization. To redress the logical shortcomings in the earlier synthesis, this chapter integrated an archaeologically relevant theory of mortuary ritual to first provide a framework for reconstructing a social portrait of the Bronze Age societies at the synchronic scale. The approach will rely on this reconstructed understanding of the local community organization (internal variables) and hypothesized intensities of imperialism (external variables) to model more precisely the potential trajectories of culture change in this region. In offering a diachronically based analysis, this approach strived for a more comprehensive and systematic framework for: identifying cultural distinction in mortuary practice and the relevant correlates for inferring patterns of cultural change in the mortuary record. Previous to this approach, these two dimensions were conflated as representative of the same social processes.

In the next chapter, an introduction to the geographic and archaeological background contextualizes each cemetery community in its regional setting. Due to the paucity of archaeological work in this region, this background primarily synthesizes the current state of knowledge on the local prehistory. In preparation for the mortuary analysis to follow in chapter 6 - 8, chapter 5 provides an impressionistic overview of inter-cemetery contrasts in location and size.

Chapter 5
Archaeology of the Qujing Region

This chapter provides a background to the physical geography and the archaeology of the 曲靖 Qujing region. The chapter progresses from a general description of the wider Yunnan region to a more particularistic description of the research area. Because Yunnan is a vast area with great ecological and cultural diversity, the first section introduces the variation in physical geography that differentiates the wider region. The second section contextualizes the Qujing plain within this wider region by linking its physical geography into a discussion of the region's economic conditions and potentials in antiquity as well as providing a background to the archaeology of the Qujing plain in chronological order, with a description of sites from the Neolithic period to the Han imperial period and of the material culture. The third section considers site location trends between periods against recent paleoenvironment data from two contemporaneous basins in Yunnan.

GEOGRAPHIC BACKGROUND OF THE YUNNAN REGION

> Far removed from the center of China, it hangs on the ridge of the continent, separated from the basin of the great rivers by chains of mountain ridges (Fei 1975:1).

Explorers and anthropologists of the 19th and 20th century risked their lives searching for cultural and physical wonders in Yunnan's mountainous and seemingly impenetrable terrain (Davies 1909, Rock 1948, Rocher 1879-80). Of the 394,000 sq km of land area constituting Yunnan province (97° 31′39″ – 106° 11′47″ E, 21° 08′32″ – 29° 15′08″ N), approximately 86% is mountainous, a figure that alludes to its impassibility (Zhao 1986). The region is a southward extension of the Tibetan plateau that descends from over 5000 meters above sea level in the north to 100 meters in the south, on the border with

Myanmar and Laos. This topographic relief has created the varied elevational zones contributing to the diversity in ecological habitats and diversity in ethnic communities unique to the province.

While early travelers noted the challenges posed by Yunnan's rugged terrain, the province itself can actually be distinguished into western and eastern geographic zones, with significant topographic differences. The western region extends from the northern border with Tibet and Sichuan province down to Myanmar, and is separated from the eastern zone by the 哀牢 Ailao Mountain range (Fig 5.1). This western zone consists of parallel high mountain ranges extending from the northwest to southeast, which are bisected by rivers descending from the Tibetan plateau. The mountain chains descend from over 5000 meters to 100 meters in its southern extent, creating steep and narrow valleys. These two major river systems, the Mekong and Salween Rivers, flow into Southeast Asia but are not navigable in these upper reaches where they pass through gorges with precipitous drops of 2000 to 2500 meters in some sections (Pantilov 1986: 174).



Figure 5.1 Map of Yunnan Province (CIA 1973)

The eastern region belongs mainly to the Guangxi-Guizhou Plateau and is composed of karst and limestone formations. This region is bordered by Guangxi and Guizhou provinces to the east and Laos and Vietnam in the south. Here, lower mountain ranges, typically below 2500 meters, are interspersed by alluvial and lacustrine basins ranging from 1000-2200 meters. These intermontane basins provide nearly all of the six percent of available arable land in Yunnan – and are aptly referred to in local terms as *bazi* or flat land (Zhao 1986:138). Most of the rivers along the northern extent of the eastern zone belong to the Jinsha (Yangzi) River system bordering Sichuan, while streams on the western fringe belong to the Red River drainage, and those along the central and eastern part of the zone drain into the Nanpan (Pearl) River.

Dramatic contrasts in seasonal temperature and vegetation cover also differentiate the two zones. The western region experiences longer and colder winters, having an average winter temperature below freezing, while the eastern region is subtropical, with annual average temperatures of 20° c and mild seasonal differences. Subtropical and montane conifers characterize the vegetation of the western region, while the eastern zone has evergreen broadleaf forests (Li and Walker 1986). The milder climate and lower elevation in the eastern zone allow for double cropping of rice in the summer and wheat in the winter. In contrast, the western region supports one crop, either wheat, barley, buckwheat, or potato (Zhao 1986:138). Given Yunnan's southern location, it is influenced by the southwest summer monsoon emanating from the Bay of Bengal, which produces strong seasonality defined by heavy summer rainfall from May-October and a dry season from November to April. The risk of drought is most severe during April.

Geographic and Economic Background

The Qujing region (103° 29' – 104° 14'E, 25°07' – 26° 06'N) is an intermontane basin found in the eastern extent of Yunnan's eastern geographical zone. The basin is bisected along a north-south axis by the Nanpan (Pearl) River and ranges in altitude from 2000 – 2400 m asl. Qujing is the fifth largest basin in Yunnan province with a total area of 435.82 sq km (Qilin People's Government 2005; Figure 5.2). The geology is dominated by limestone, gneiss, granite, basalt, and other siliceous rocks (Institute of

Geography, CASS 1990). Given the basin's size and access to a perennial water source, Qujing is one of the most agriculturally productive basins in the province.

The basin can be subdivided into four distinct zones based on elevation: *i)* valley floor, *ii)* lower terraces and foothills, *iii)* upland slopes and *iv)* subvalleys. The *valley floor* designates the flood plain zone of the Nanpan River, which contains rich alluvium soil but is also prone to severe flooding during the rainy season. Modern agricultural practices have modified significantly the local environment since ancient periods. According to local authorities, recurrent flooding led to the canalization of the Nanpan River in the early 1970's. Canalization of the river has improved settlement and paddy field production in this floodplain zone. Modern vegetation cover consists mainly of irrigated paddy fields.

The *lower terraces and foothills* rise from the edge of the floodplain to roughly 100 meters above it. While this zone does not possess rich alluvium, it does offer better drainage than the floodplain during the rainy season. The subsoil can be thin and rocky in places. Stream fed irrigation along with terracing characterize the agriculture in this zone. Modern vegetation includes rice, maize cultivation and orchards.

The *upland slopes* extend from the foothills up to an elevation typically over 2500 meters. This zone is usually rocky with shallow subsoil. While modern vegetation cover consists mainly of secondary growth forests dominated by pine, the Bronze Age environment may have been very different, as discussed below. Agricultural activity is curtailed in this zone by colder temperatures though wild mushrooms are a unique product of this zone harvested during the rainy season.

The *side valleys* extend east and west bound from the borders of the Qujing basin. They tend to be of rugged and hilly terrain.

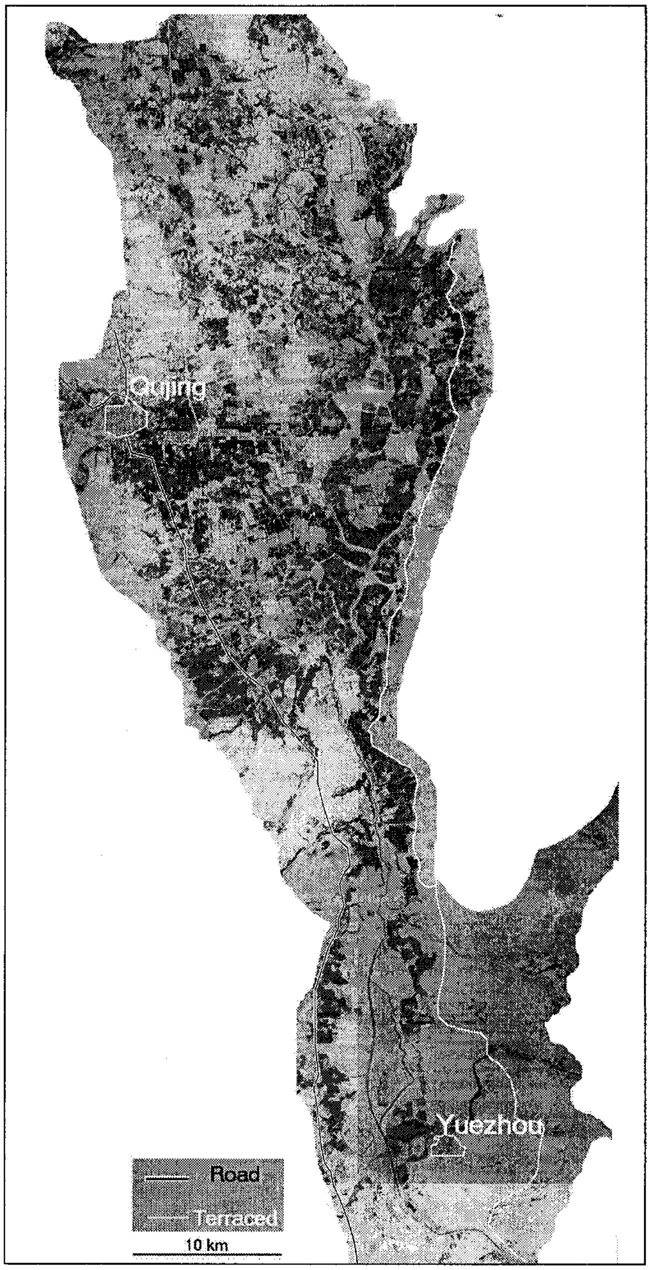


Figure 5.2. Map of Qujing Plain showing lines demarcating the alluvial basin from the terraced foothills.

In addition to the comparative fertility of the Qujing region, the basin also serves as a principal pass connecting Sichuan to western Yunnan, South Asia, and Southeast Asia. Beginning as early as the 3rd c. BC, the strategic importance of this pass led to the construction of a transport road called the 五尺 *wuchi dao* (five pace wide road) under the Qin State (Fan 1989). While references to this road are fragmentary before the Han period, later historical accounts record the increasing visibility of this geographic route in

facilitating communication and trade with India, Tibet, and Southeast Asia. The section of the road passing through Qujing became part of the emerging network of roads collectively known as the Southwest Silk Road (南方丝绸之路 Nanfang sichou zhi lu) in the first millennium AD (Yang 2004:287, Fang 1987:19) (Figure 5.3). From the north in Sichuan, the route passes through 朱提 Zhuti Commandery (Zhaotong), 味县 Wei County (Qujing), and 益州 Yizhou (Kunming), the modern provincial capital located 134 km to the southeast in the Lake Dian plain. From Yizhou (Kunming), the road funnels traffic either westward through 叶榆 Yeyu (Dali) or southward to Vietnam along the Red River valley.

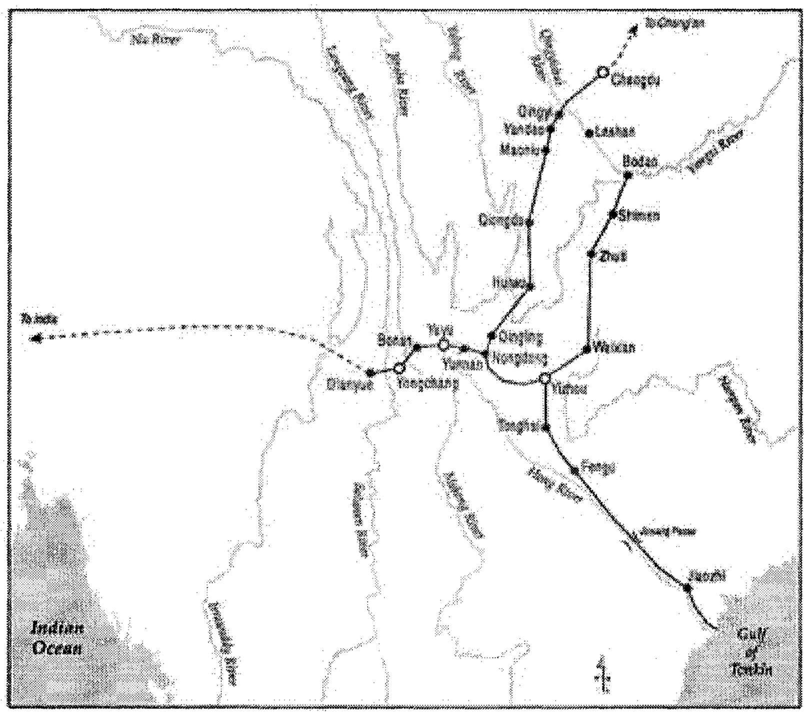


Figure 5.3. Map of the Southwest Silk Road (after Yang 2004: 291).

Of further economic importance are the major deposits of mineral ores and the circulation of these resources along this eastern corridor. To the north of Qujing, 东川 Dongchuan holds major deposits of lead and zinc, while 会泽 Huize has major deposits of copper (Murowchick 1988). Cross regional interaction along the Southwest Silk Road possibly accounts for the common material culture, especially in bronze artifacts, among the Bronze Age societies extending from Qujing and Dian area to northern Vietnam.

Cast bronze artifacts including weaponry types (swords, socketed spears, axes, and dagger axes) and drums have a wide distribution along this eastern stretch. Chapter 6 provides an extended discussion of these artifact types. Besides similarities in bronze artifact assemblages, the circulation of other materials including cowrie shells (identified as of Indian Ocean origin; Pirazolli-t'Serstevens 1992), agate, carnelian, and glass beads suggests the possibility of exchanges both within the network of regional Bronze Age cultures and beyond to Southeast Asia and South Asia. While the operation of these ancient trade networks requires future archaeological research for clarification, the importance of the Qujing area to the economic and political development of this wider region during the 1st millennium BC deserves attention.

ARCHAEOLOGICAL BACKGROUND

Qujing's prehistory owes its unfortunate discovery to the collectivized projects carried out under the Great Leap Forward period, 1957 – 60. Farmers from work communes in the countryside retrieved bronze artifacts eroding from prehistoric mounds for melting in an effort to increase metal production under nationwide industrial programs. Archaeological investigations only began following the end of the Cultural Revolution in China in 1977, when the Cultural Relics Bureau was re-instituted. Since 1977, the Cultural Relics Bureau has conducted archaeological projects mainly to salvage and preserve sites threatened by construction. Therefore, most of the archaeological work has been excavations of large burial mounds, whose obtrusive nature usually hinders public work projects and village expansion. While these burials mounds provide invaluable data, future work in settlement survey could contribute toward a more comprehensive view of the region's prehistory.

Neolithic Period

The earliest Holocene occupations documented occur at a Neolithic period cave site located in 董家村 Dongjiacun hamlet near the village of 朱街 Zhujie (Fan 1989:9-10). The site yielded a midden that is 1-3 m deep and 4-5 m wide filled with burnt rice remains and ceramics (Fan 1989:9). According to Liu Chengwu (personal communication), cultural material was distributed across the full spatial extent of the

have not been fully documented. A rice seed from the midden deposit yielded an uncalibrated radiocarbon date of cal.1460-1360 BC (ZK-897 3125 ± 54 BP), which corresponds with the Shang - Zhou period in the Central Plains (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:2). Specialists at the Yunnan Institute of Agriculture have identified the seed as *Oryza Sativa* of *Keng* subspecies, a domesticated variety common to subtropical Southeast Asia (Fan 1989:10). The characterization of the Zhujie cave as a Neolithic period occupation site is based on the absence of bronze artifacts.

Recent excavations in the surrounding eastern zone of the Yunnan-Guizhou plateau have revealed corresponding dates with Zhujie cave. In 威宁 Weining County of neighboring Guizhou province, the sites of 鸡公山 Jigongshan and 吴家大坪 Wujiadaping, which are located in an alluvial valley on the border between Guizhou and Yunnan province, revealed pre-bronze period sites dating to cal. 1450 – 1300 BC (Guizhou Provincial Institute of Cultural Relics and Archaeology 2006). Like the cave site in Qujing plateau, midden deposits from the two occupation sites also yielded large caches of rice remains though no identifications have been published. In the Lake Jili 杞丽 basin, which is 70 km south of the Lake Dian basin, a radiocarbon date cal. 2060 - 1890 BC (BK-89079 3630±80 BP) from the 海东 Haidong shell midden site near 通海 Tonghai city predates the Qujing and Weining region (Li 1998:465; Chen 2003). While the determination of a regional Neolithic archaeological culture awaits future research, evidence of rice cultivation in the high elevation basins and valleys suggests the presence of agricultural communities in the eastern corridor of the Yunnan-Guizou plateau from approximately 2000 BC onward.

Bronze Age

As mentioned earlier, most of the archaeological work in Qujing has concentrated on the protohistoric Bronze Age period (900 BC – 1st c AD). Unlike contemporary burial practices in other areas of Yunnan, Qujing is distinguished by the use of distinct cemetery locales over successive generations, with an estimated span of 500 to 700 years (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002). This burial practice

resulted in the construction of large artificial mounds that constitute prominent features in the landscape. Some mounds reach eight meters in height and are locally referred to as hills. To date, six Bronze Age burial rounds have been documented in the Qujing Basin.

Each mound contains numerous shaft tombs placed in superimposed succession over previous interments (Figure 5.4). The process of mound building began by constructing a layer of soil usually from 50 cm to 100 cm in thickness. Individual graves were then dug into this constructed layer, producing a rectangular or elliptical chamber. Grave construction then diverged into two distinct variants: 1) direct interment, with soil fill placed inside of the grave chamber; and 2) interment in the chamber, which was then additionally capped by an earthen tumulus. The grave chamber fill is distinguished from the surrounding layer by its mottled and looser texture. A few type 1 graves are further distinguished by the construction of a secondary ledge around the perimeter of the chamber (Figure 5.4). The majority of graves found in excavation are type 1 while only a few are tumuli.

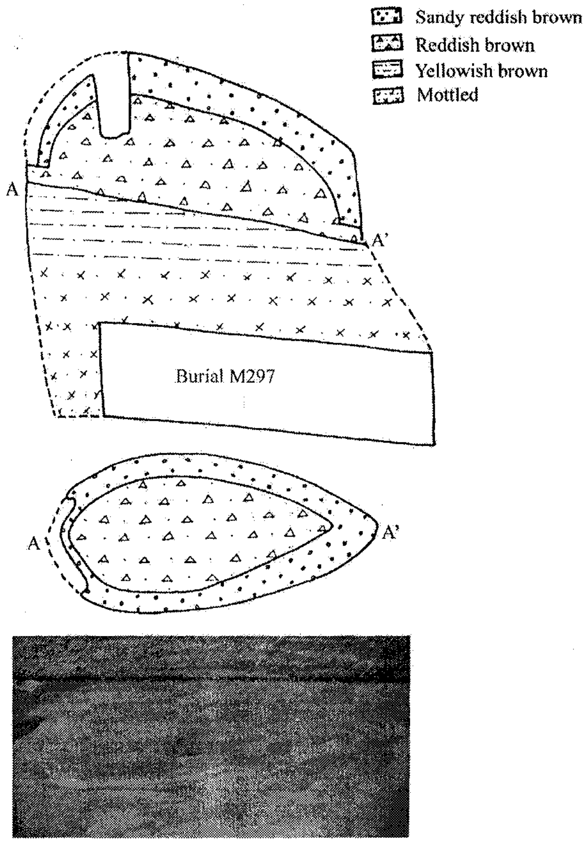


Figure 5.4. The tumulus structure associated with burial 297 at Batatai.

Production of the tumuli burials involved a fairly elaborate multi-stage construction process, suggesting significant labor investment. First, a circular earthen mound was placed above the burial chamber. This mound was then topped with a final layer of composed of a crushed stone and clay mixture. The resulting mound ranges from 20 cm – 2.5 m in height. According to excavation reports, this latter layer was constructed by applying individual layers of sediment that were then rammed down (Wang 1998:357-377). The compaction of layers created by this ramming action yields a shell on the tumulus, with a sometimes polished surface. The shell is distinguishable from the tumulus fill by its increased compactedness and the yellowish color created by the crushed quartz. This construction sequence was then repeated with a second stratum of soil construction leading to the deposition of a second layer 50-100 cm in thickness that fully enclosed the first (Figure 5.5). By carefully documenting the order of construction, burials from the bottom to top of the mound can be arranged into a sequence from early to late time periods, presumably representing a continuous tradition and use-span of multiple generations.

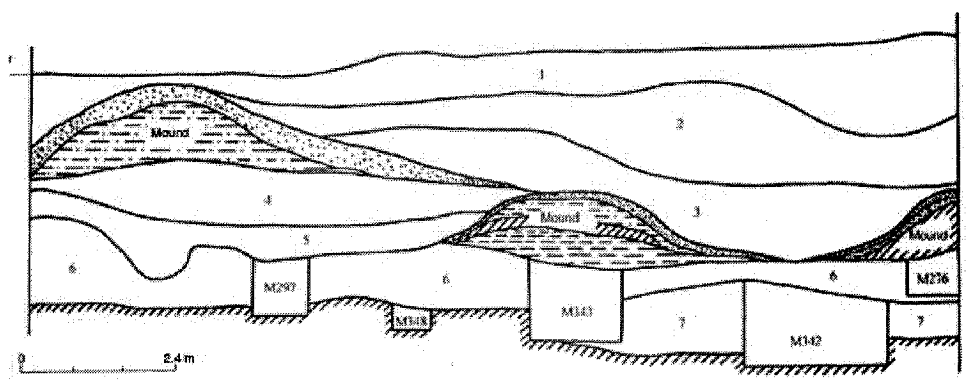


Figure 5.5. Southeastern wall profile from the Batatai site.

Site distribution

Because little survey work has been carried out in the Qujing region, we have no knowledge of Bronze Age settlement patterns. Archaeological work has mainly focused on the excavation of mounded cemetery sites. Within the basin, most of the documented Bronze Age cemetery mounds are located along the terraces of the Nanpan River or in the foothills with the exception of the 平坡 Pingpo site. The six documented cemetery mounds include 八塔台 Batatai in Zhujie township, 横大路 Hengdalu in 越州 Yuezhou

township, 平坡 Pingpo in 潇乡 Xiaoxiang village, 三岔 Sancha in 西山 Xishan village, Mianshan in 茨营 Ciyin township, and 五联 Wulianyan in 三宝 Sanbaozhen town (figure 5.6). Only the sites of Batatai, Hengdalu and Pingpo have been extensively excavated, yielding 756 burials.

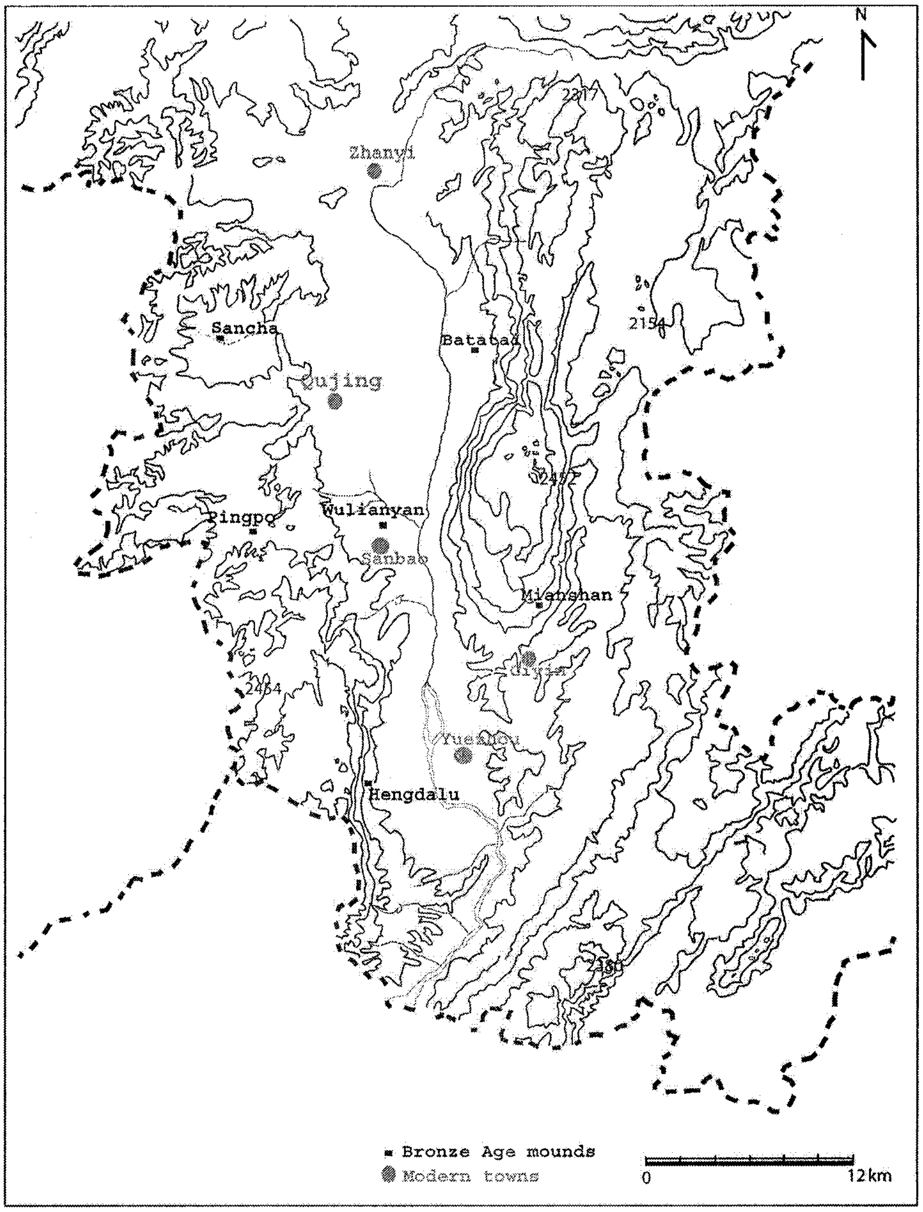


Figure 5.6. Map of Bronze Age sites.

Batatai (n=348) consists of eight mounds and is the largest of the Bronze Age mound complexes, The site is located on the lower terrace of the eastern bank of the Nanpan River, 11 km northeast of Qujing. Of the three sites, Batatai is located furthest north in

the basin and is the only site known to be in the vicinity of a Neolithic settlement described above. The Cultural Relics team excavated mound 1 and the western half of mound 2, the largest mound in the group, over seven seasons from 1977-84 and opened a horizontal exposure measuring 480 m^2 out of a total area nearing 5000 m^2 (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002, Fan 1989:7).

Hengdalu (n=188) is a single mound, 25 km south of Qujing on the opposite bank of the Nanpan River in the lower foothills. It is the southern-most site in the basin and is c. 12 km south of the known Eastern Han town of Sanbaozhen. The mound measures 90 by 40 m at its base and is 8.1 m in high. The Yunnan Provincial Institute of Cultural Relics and Archaeology excavated 1000 m^2 of the 4000 m^2 total area in 1998, representing approximately 25% of the total site (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:9). A radiocarbon date from a lower stratum burial yielded a calibrated date of 900 - 760 BC (2625 ± 65 BP) while bimetallic objects found in top stratum burials suggest terminal use of the site in the late Western Han period (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:187).

Pingpo (n=220) is a single mound in the hamlet of Pingpo, Xiaoxiang township (103 45 E, 25 25 N) located approximately 7.2 km from Qujing. The hamlet of Pingpo is actually built on the mound. Unlike other site locations, Pingpo is not located in the alluvial basin but in a rugged higher subvalley leaving the Qujing basin. The site covers 600 sq m and has 3 m of stratified deposits, of which 110 sq m were excavated. While the excavation report has not been published, Pingpo is of similar construction with Batatai and Hengdalu (Liu Chengwu personal communication 2004). Wood from a coffin excavated in a lower stratum yielded two calibrated dates, 920 - 720 BC (2620 ± 130 BP) and 820 - 750 BC (2582 ± 45 BP) (CASS 2004). Terminal dates for the site await further report, though local archaeologists consider Pingpo to be contemporaneous with Batatai and Hengdalu (Liu Chengwu personal communication 2004).

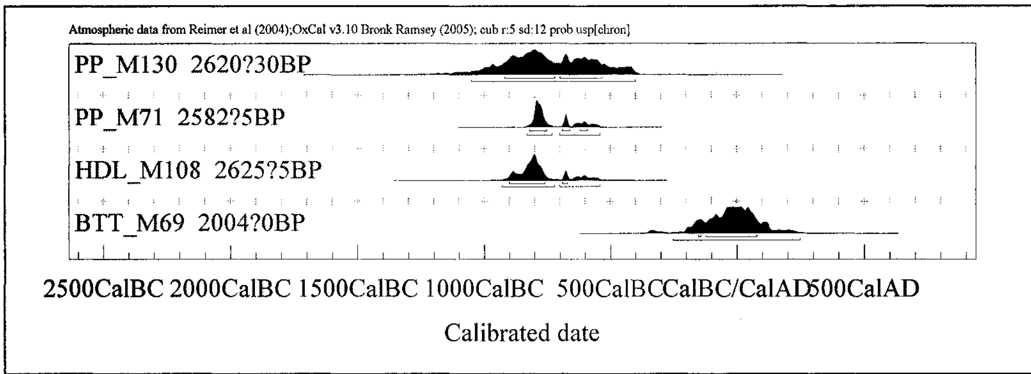
Wulianyan is a mound located 7.5 km south of Qujing near the town of Sanbaozhen, which is also the site of an Eastern Han town. The mound is 80 sq m and 6.7 m high. In

the 1 – 1.2 m deposit at the base of the mound, bronze weapons and ceramics of the Bronze Age type were found (Fan 1989:27). This mound has been badly damaged. *Sancha* is located 7 km northwest from Qujing on the mid foothills of a subvalley. Along with Batatai, Sancha's location is on the northern extent of the basin. Local farmers found a bronze ploughshare in 1981 (Fan 1989:11). No site area estimates are available. The village of Sancha, which means three forks in Chinese, is thought to be the location of a Han town in Wei County (Qujing region) during the Western Han period (206 BC – 9 AD).

Mianshan is located approximately 20 km southeast from Qujing on the terraced banks of the Longtan River, a side valley of the Nanpan River basin. The site measures 250 sq m in area. In 1976, local farmers found nearly 40 kg of bronze artifacts consisting of ploughshare, arrows, dagger-axes, and axes in the mound but the finds have not been published (Fan 1989:28).

Bronze Age chronology

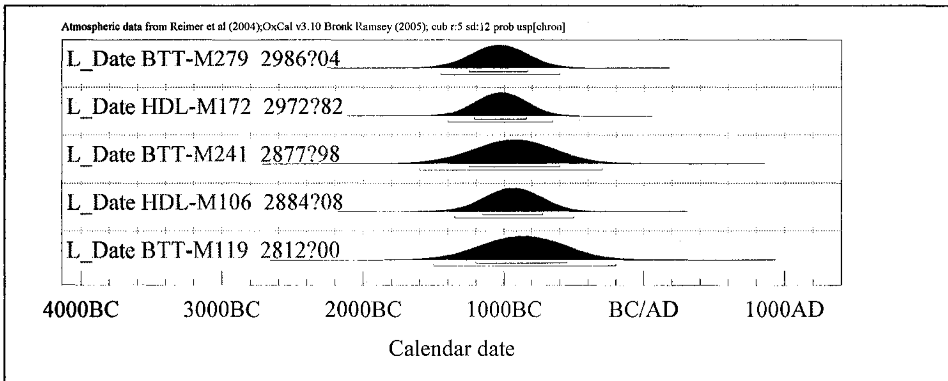
<u>Absolute date determinations</u> Based on radiocarbon dates, the Bronze Age period in the region spans nearly one millennium (900 BC to AD 109). The absolute dates presented in this study derive from both thermoluminescence (TL) and radiocarbon methods. Radiocarbon dates were submitted by the excavators while I obtained TL samples from unreconstructed pots and their surrounding soil deposit. As shown below, the two sets of dates are internally consistent within each respective procedure. The three radiocarbon samples from Pingpo and Hengdalu's basal deposits indicate activity at these cemetery sites beginning around 900 BC (see figure 5.7). BTT_M69, which is associated with the top most stratum at Batatai, dates 120 BC - 80 AD, the documented period of Han conquest. Thus, the terminal period of mound use at these Bronze Age mounds coincides with the historic period. Based on these radiocarbon dates, the estimated time span for these cemetery sites date roughly one thousand years, from 900 BC to AD 80.



920-720 BC 41.4%
820-750 BC 53.1%
900-760 BC 64.7%
120-80 AD 66.9%

Figure 5.7. Radiocarbon dates from the basal and uppermost deposits at the three sites.

TL determinations are internally consistent but predate the radiocarbon dates by nearly 200 years when the standard errors are factored in. As shown in Figure 5.8, the median points for the two dates from the Hengdalu and Batatai's basal deposits (BTT M279 and HDL M172) are both in the 2900 BP range. Similarly, the median points from burials (BTT M241 and HDL M106) stratified in the level above those earlier burials also fall in the same range of 2800 BP. While these dates support the stratigraphic ordering of these burials, they become indistinguishable chronological ranges when the standard errors are factored in. Given the problems associated with dating curated samples using the TL method, the radiocarbon dates probably provide a more reliable estimate for the regional chronology. While not entirely unreliable, the TL dates do provide support for the relative contemporaneity of Batatai, Hengdalu and Pingpo, and possibly of the stratigraphic sequences between these sites.



980±204BC
966±182 BC
871±298 BC
878±208 BC
806±300 BC

Figure 5.8. TL determinations from the stratified deposits from BTT and HDL sites.

Conventional Bronze Age chronology

Local archaeologists have established a periodicization scheme based on material assemblage excavated from more than 1000 graves in the Lake Dian area. Because the Qujing area and Dian area have a shared tradition of bronze weaponry, this has allowed for cross-dating between regional assemblages. The determination of subphases within the Bronze Age period primarily relies on chronicle stylistic and morphological changes in bronze weaponry types and ceramic vessels. As Table 5.1 shows, however, the earliest deposits from Qujing possibly pre-date early Dian burials by 150 – 200 years.

The Bronze Age, as conventionally understood, is generally divided into three distinct phases: early, intermediate and late (see Table 5.1). Based on local dating conventions derived from the Lake Dian region, the early phase should correspond to the Spring-Autumn period of the Eastern Zhou Dynasty (770-580 BC). The intermediate phase corresponds to the mid Spring and Autumn – early Warring States period (580 ~ 400 BC). Diagnostic markers of this phase include the introduction of the halberd with a square hilt and mounting hole. The late phase corresponds to the late Warring States – Qin and Early Han period (400 ~ mid 2nd BC). Diagnostic markers of this phase include bronze swords with hilt guards, curved blade halberds, knives, and new ceramic vessel types include pedestal/footed serving ware and shouldered jars. The final period is the protohistoric phase where the region begins to receive mention in the Chinese textual accounts. Diagnostic markers include the introduction of bimetallic iron/bronze implements to all iron implements, bronze serving ware, bronze Chinese belt buckle, crossbow mechanisms, and Chinese coins from the Western Han period to the Wang Mang Interregnum.

Table 5.1: Chronological periods of the Bronze Age

Local Phase			C14 Dates	Diagnostic Markers
Bronze Age	Western Zhou? (900 – 750 BC)	Pre-contact	Hengdalu Cal. 900 - 760 BC 2625 ± 65 BP Pingpo Cal. 920 – 720 BC, 2620 ± 45 BP Cal. 820-750 BC[1] (ZK 3176, 2582 ± 45 BP)	Few bronze artifacts in graves.
	Early (770-580 BC) Spring Autumn *Intermediate* (580-400 BC) mid Spring Autumn – early Warring States	Pre-contact	Lijiashan M21 790-510 BC (ZK-294, 2500±105 BP) Yangfutou M19 Cal. 756-400BC (Yunnan Provincial Institute of Cultural Relics and Archaeology 2005:715)	Bronze swords without guard. Square hilt halberd = counterpart from Lijiashan
	Late (400-mid 2nd c. BC) late Warring States – Qin State – Early Western Han	Initial Contact	Tianzimiao 2150±80 BP (346 BC) Yangfutou M22 Cal. 408-377 BC (Yunnan Provincial Institute of Cultural Relics and Archaeology 2005:715	Bronze sword with guard. Bronze curved halberd and hollow hand knives = counterpart from Tianzimiao burial M41 Pedestal footed ceramic vessels and shouldered Jars.
Protohistoric/Iron Age (late 2nd c BC - 25 AD) Western Han 206-9AD - Wang Mang 9-25AD		Conquest - Post conquest	Batatai M69 Cal. 120-80AD (ZK-897, 2004±80 BP) Tianzimiao Cal. 60 – 360 AD (1820±130 BP)	Bronze cauldron and lian serving vessel Bimetallic implements Chinese coins (W.Han – Wang Mang) Central Plains belt buckle

Note: Table shows comparison of Central Plains dynastic periods (Chinese reporting convention), radiometric dates and associated diagnostic artifacts. Lab numbers for radiocarbon samples are provided if reported in publications.

[1] All dates provided in parentheses were calibrated using OxCal 3.0, published atmospheric data from Reiner et al. 2004. Other calibrated dates are published in the referenced Chinese reports. Yangfutou dates are published in (Yunnan Provincial Institute of Cultural Relics and Archaeology 2005:715). Lijiashan and Tianzimiao dates are published in KGSKY (1991:459-465).

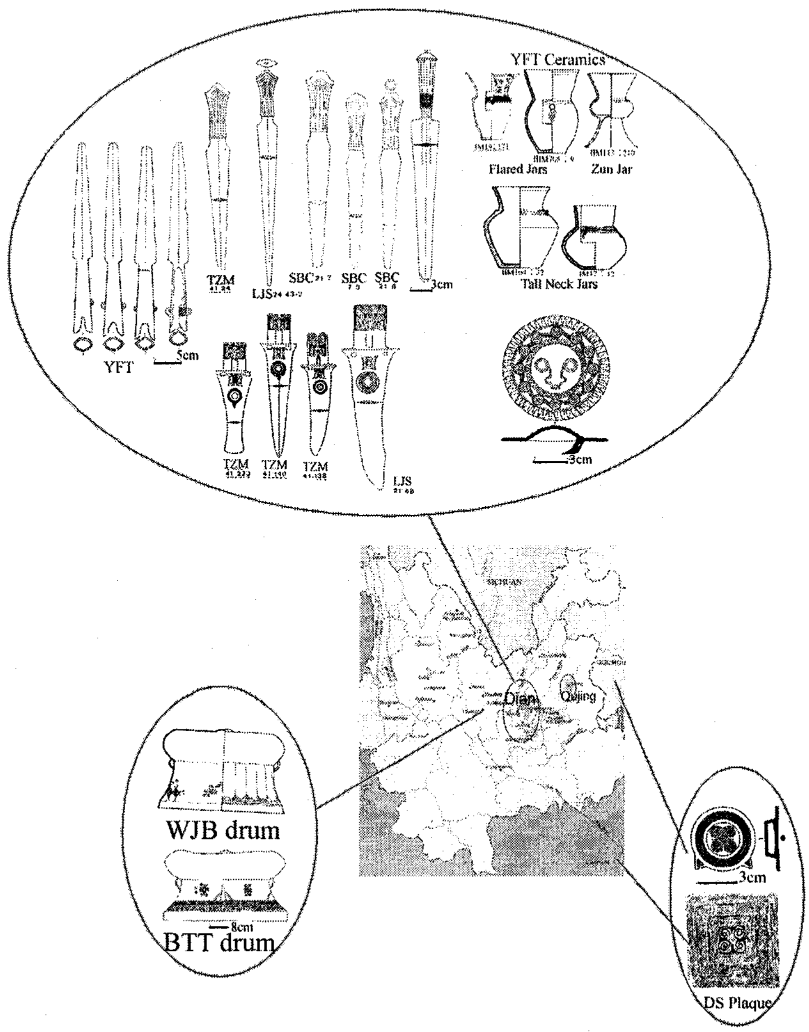
This diagnostic scheme, as mentioned earlier, is largely based on the Lake Dian assemblage. With the exception of the earliest deposits in the Qujing cemeteries, the distribution of artifacts in later period burials elicits some correspondence with observed trends in the Dian mortuary assemblage. However, as shown in Table 5.1, the dating of burials from the Qujing region to 900 BC, which is 150-200 years earlier than Lake Dian burials, questions the applicability of the conventional chronological scheme. The methodological inconsistencies adopted by different local archaeologists for the Dian area materials also merit a separate appraisal of the chronological scheme. The Dian burials, in addition, are not from stratified contexts and the radiometric dates from Dian area cemetery sites have been widely debated (Pirazolli S'terstevens 1992).

Given these considerations, I will provide an independent assessment of the internal periodization of the Qujing region. The stratified context of Qujing burials, in effect, provides an opportunity to resolve wider regional chronology problems. The methods for determining temporal phases in the Bronze Age will be separately evaluated in each site chapter (chapters 7 and 8). In general, chronological phases will be determined by corresponding changes between construction sequences, distribution of distinct morphological types across different artifact classes, and grave orientations.

Defining the Qujing Bronze Age Complex

Beyond the issue of incongruent temporal scales, the Qujing complex is also differentiated from the Lake Dian region by distinctive material culture. As discussed in chapter 4, scholars have suggested, based on textual and archaeological materials, that Bronze Age Qujing groups belonged to or were affiliated with the Dian polity. Because Chinese archaeologists simultaneously refer to the textually defined Dian Kingdom (Dianguo) as the Dian culture (Dian *wenhua*), the Dian appears as a bounded political and cultural entity, with its distinctive bronze assemblage serving to mark its cultural identity. Sites yielding Dian style artifacts are therefore assigned to the Dian orbit. Regional complexes, as represented by archaeological sites in the Qujing region, become part of the Dian political system and are assumed to be similarly organized. However, on the basis of striking differences in the archaeological material, western scholars – and some Chinese archaeologists – argue that the Qujing sites may have been independent

from the Dian and distinctive in its social and political organization (Rode 1999). A preliminary examination of the mortuary treatments shows formal divergences between the Qujing "tradition" with that of the Dian culture, casting doubt on the interpretation of the Qujing region as under unified Dian control. For instance, Qujing area burials are distinguished from Dian cemeteries by a unique tradition of mound construction.



Site abbreviation list: (YFT) Yangfutou, (SBC) Shibeicun, (LJS) Lijiashan, (TZM) Tianzimiao, (BTT) Batatai, (DS) Dongson, and (WJB) Wanjiaba

Figure 5.9. Artifact affinities shared by Qujing Bronze Age sites and regional Bronze Age complexes in Yunnan, Guizhou and Vietnam.

The Dian assemblage is characterized by distinctive bronze artifact types including kinds of weapon implements (spears, daggers and swords), plow, half-moon shape sickle, and a pick-ax. In addition, distinctive ornament types such as round and

rectangular bronze plaque buckles (*koushi*) and jade, agate, and carnelian beads. Artifacts typically identified as hallmarks of Dian culture consist of ornate bronze items associated with high status burials (Lee 2002; Yao 2005). These include bronze drums, cowrie shell containers, headrests, pole finials, weapon staffs, parasols, and serving vessels. These object types have a wide distribution and some can be found as far south as northern Vietnam. Of these Dian type artifacts, the Qujing sites have yielded the bronze weapons, pick-ax, and plaque buckles. while among the "elite" object types, only one bronze drum has been reported from the Batatai site, which appears to be stylistically more similar to the one excavated from 万家坝 Wanjiaba site in Chuxiong, located in central Yunnan than to 'typical' Dian forms (Rode 1999: 142). The distribution of plaque buckles also differs from the Dian area with the Qujing assemblage being dominated by the round "common" style. Art historians have differentiated bronze buckles between those bearing a "common" pan-Southeast Asian motif based on bands of geometric patterns executed in two dimensions versus those of the Lake Dian region, characterized by naturalistic animal designs rendered in three dimensions (Rode 1999:113-115).

As shown in Figure 5.9, the Qujing region also shares artifact affinities with Bronze Age sites located in Guizhou province to the east, in particular the bronze bangle and belt ornaments (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:177-188). This spiral pattern on the belt ornament is also a decorative motif found on belt ornaments in northern Vietnam (Berzacier 1972:160).

Another point of divergence with Lake Dian area burials is the predominance of ceramic grave offerings in the Qujing region, characterized by vessel types that are distinct from the Dian ceramic assemblage. The Qujing ceramic assemblage consists of tripods, guan type jars, flared mouth jars, pedestalled containers (*zun* and *dou*) and small round platter with a rise in the center (see Figure 6.1). Of the most commonly occurring vessel types, the tripod, guan type jars, flared mouth jars and plates, only the flared mouth jar and plate are found in the Lake Dian area (羊甫头 Yangfutou, 天子庙 Tianzimiao, 太极山 Taijishan, Citongguan 刺同关), albeit in low frequency.

In general, the mortuary assemblage in Qujing lacks many of the high status bronze objects found in the Lake Dian region. In addition, the configuration of grave

offerings also tend to be less elaborate than that of the Lake Dian region, which are dominated by bronze artifacts even in graves of lower position. This stands in marked contrast to the mortuary program in Qujing, where assemblages are dominated by configurations of ceramic vessels types, in particular a tripod cooking vessel. These different patterns suggest a scale of wealth and status demarcation in the Lake Dian region that did not characterize communities in the Qujing region.

Imperial period: WesternWestern Han (206 BC – AD 9) – Eastern Han period (25 AD – 220)

Site Distribution

With the initial incorporation of the Qujing region into Han State, site types and locations begin to change, a development possibly associated with "Han" immigration into the region. Site types can be divided into mounded cemeteries from the Bronze Age, Han tumuli clusters referred to as *liangdui* burials in the Chinese literature, and Han settlements (Figure 5.10).

<u>Bronze Age Group Mounds:</u> Of the six Bronze Age cemetery mounds, Batatai and Pingpo continue to be in use into the Western Han period. Diagnostic artifacts of the Han period include bimetallic and iron implements and Han *wushu* coins, which can be identified with mint dates. Burials at Batatai and Pingpo last into the Eastern Han period as evidenced by the discovery of Wang Mang period – Eastern Han coins in the burials.

<u>Han Tumulus Clusters:</u> Tumulus graves of the Western Han – Eastern Han period in the Qujing region have been heavily looted. They are also generally located in the lower foothills and are concentrated in six locations: Yuezhou town, 沾益 Zhanyi town, Sanbaozhen town, Ciyin town, Huancheng (old Qujing), and Wenquan village. These sites consist of tumulus clusters ranging from 7 to 8 meters in height (Fan 1989:29-31). Under each tumulus is typically a single burial chamber with a ramp leading from the tomb opening into the chamber. Some grave chambers are constructed with bricks that are impressed with either flower or checkered pattern. Of the 70 tumulus clusters in the Qujing region, only two sites are dated to the Han period. These include 罗汉山 Luohanshan in Sanbaozhen and 黄泥堡 Huannibao near Yuezhou, of which only Luohanshan has been excavated (2001).

Luohanshan consists of a cluster of 12 tumuli, possibly all representing a family of local officials. Excavation of one tumulus (burial 11) revealed a chambered tomb constructed with Han style bricks (Yunnan Provincial Institute of Cultural Relics and Archaeology 2001). Based on the grave artifact and tomb style, burial 11 is dated to the mid to late Eastern Han period, or roughly 2nd century AD.

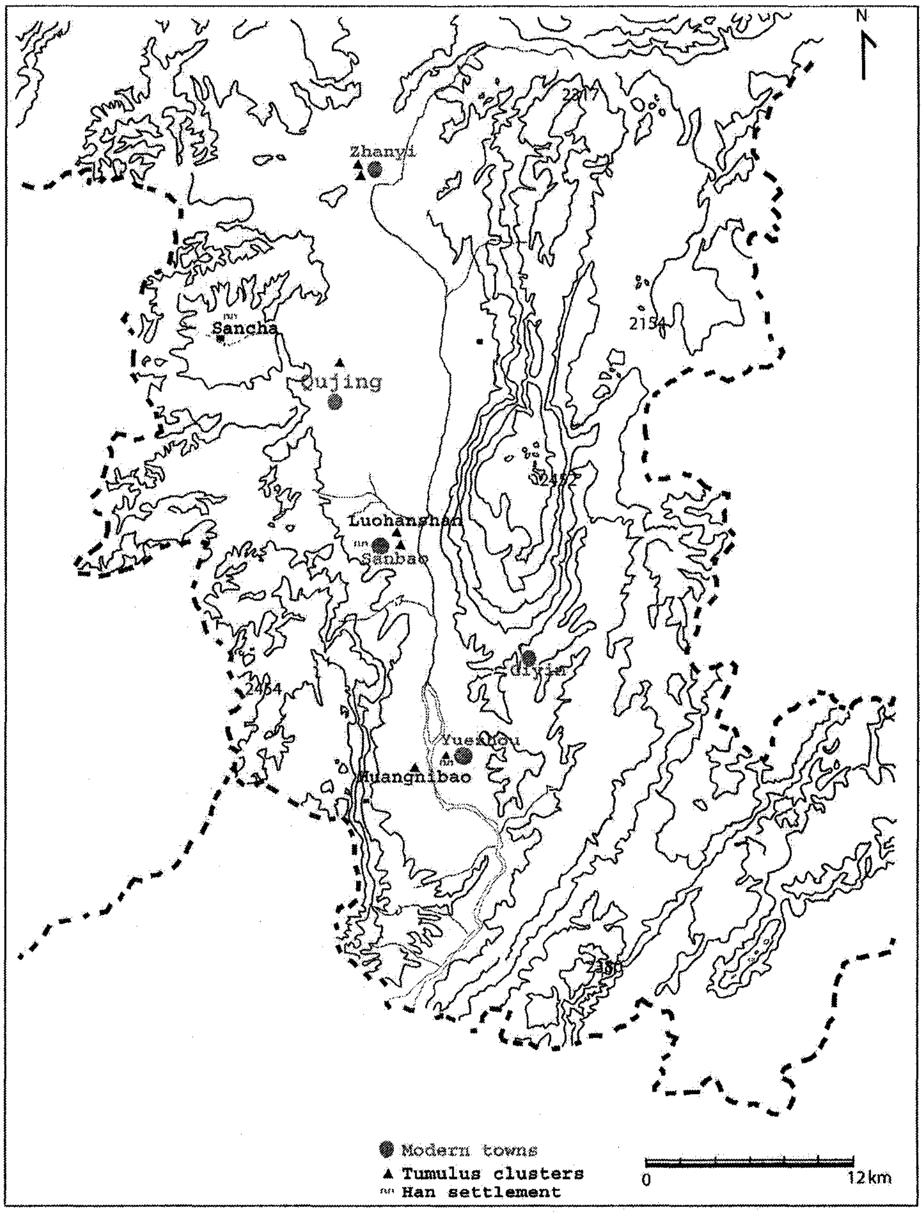


Figure 5.10. Map of Han period sites.

Han period sites

Determination of Han period site locations is based mostly on textual accounts from the Three Kingdom to Tang period. Due to the lack of survey and archaeological investigation, it remains difficult to identify actual geographic locations with mentioned place names. Only one location, Sanbaozhen, has provided evidence of Han period occupation. Preliminary survey revealed a dense scatter of Han roof tiles from the town center to the edge of the town, as delimited by mud walls probably of the Qing period (1644-1911 AD). Sanbaozhen, unlike the Bronze Age and Han period burial sites, is located in a broad open stretch of the valley approximately 7.5 km south of Qujing.

The towns of Yuezhou and Sancha may also have been occupation sites during this period due to their references in the textual record and concentration of Bronze Age and Han period cemetery mounds in their vicinity. Sancha and Yuezhou are roughly equidistant to Sanbaozhen, with Sancha located 12 km to its north and Yuezhou 15 km to the south. The town of Sancha means three forks in Chinese and was an important staging post in historic times (Fan 1989:20). Local cultural relics office have suggested that the remains of an old stone road in Sancha belong to the five pace path built during the Qin (221-207BC) (Qilin People's Government 2005). Like Sanbaozhen, the possible site of Yuezhou is also a walled town located on a low terraced bank of the Nanpan River. During the Han period, Yuezhou was called Tonglao and served as an important military post in historic times (Fan 1989:17). The possible importance of this site is also suggested by the discovery of a tomb stele called Cuan Bao Bei 爨宝碑(c. 405 AD) memorializing a local prefect belonging to one of Yunnan's powerful families surnamed Cuan in this town (Qilin People's Government 2005).

SITE LOCATION TRENDS BETWEEN THE BRONZE AGE AND HAN IMPERIAL PERIOD

While any understanding of ancient settlement patterns requires considerable future archaeological work, initial observations of Bronze Age and Han sites suggest some preliminary contrasts in site location between the two periods. In the Bronze Age, cemetery mounds are primarily located either in the foothills and terraced banks of the

main river basin (Batatai, Wulianyan, and Hengdalu), or in sub valleys leaving the basin (Sancha and Mianshan), or in the mountainous uplands (Pingpo). While use of the Batatai and Pingpo cemeteries continue into the following Han period, no Han settlement and tumulus clusters were found in their vicinity. As shown in Figure 5.10, tumulus clusters and possible settlement sites of the Han period tend to be located on the floodplain or on the lower terraced banks of the Nanpan River. The walled sites of Sanbao and Yuezhou are found in a broad open section of the basin and are adjacent to the Nanpan River. The tumulus clusters at Zhanyi and Wenquan are also similarly located on the banks of the Nanpan River, directly on the floodplain. Sancha appears to be the only site located in the foothills and in a subvalley away from the basin that may have served as an important transport pass. If these Han type sites and Bronze Age cemetery mounds were contemporaneous during the Han occupation (from 109 BC), they appear to occupy different locations. This spatial contrast requires intensive archaeological survey to clarify the cultural, political and economic dimensions behind what may be two different settlement systems.

Table 5.2: Pollen record from Lake Erhai and Lake Dian

1950 BP (Post-Han conquest)	Significant increase in grassland and scrub taxa. Reduction in hillside tree taxa.
2500 BP	Hillside and valley floor taxa consistent. No replacements.
4000 BP	Establishment of climate. Strong seasonality, increase in Pinus, Quercus, and Cyclobalanopsis. (Sun et al. 1986)

In the absence of settlement data, recent palynological research in other circumscribed basins of Yunnan have offered evidence suggesting a marked shift in regional land use pattern beginning around 100 BC, coinciding with Han incorporation of the region. The two palynological studies are centered at Lake Erhai in Dali (Yeyu on map of Southern Silk Road) and Lake Dian. These two areas represent the largest and most agriculturally fertile zones in Yunnan and were occupied by fairly complex societies

during the mid first millennium BC. According to archaeological data and textual accounts, the Bronze Age period of both regions is contemporaneous with that of Qujing.

Pollen cores from the Lake Erhai and Lake Dian region indicate a notable transition in the sequence that is particularly pronounced in the late Holocene (c. 2000 BP). Beginning in the first millennium BC in the Lake Erhai region, an increase in Poacea in the pollen record suggests the intensification of land modification associated with agriculture, though it is difficult to identify Poacea directly with rice. The concomitant increase in Juglans, Olea and Moraceae in the record, which are indicators of arboriculture, further suggest this shift in agricultural intensification (Shen et al. 2006:274). By 2140 cal BP, a sharp increase in land clearance activity is suggested by a rapid decline of Pinus in the pollen record and a sharp increase in Poacea and other disturbance taxa (Shen et al. 2006:274). The pollen record from Lake Dian also reflects a similar shift, though this transition is more clearly identifiable after 2000 BP. During this period, the palynological pattern also shows a sharp increase in grass (Gramineae) and Araceae pollen accompanied by a disappearance of hillside taxa (Sun et al 1986:449). This change in the pollen record coincides with a marked increase in clay inwash in the lake sediments (Sun et al 1986:464).

These trends in the palynological record correspond with the economic and demographic developments of Han colonization. During the Western Han period, the Han emperors issued edicts urging local officials to intensify production through land reclamation and clearance of wastelands (Yu 1967: 33). These measures were necessary to make arable land available to support the large number of immigrants moving into the southern territories. According to one census study, the population of Yizhou commandery (of which Qujing was one of 24 counties) increased 230% from 600,000 in 2 AD to 2 million in 140 AD (de Crespigny 1996-7:759-768)[2]. Terracing and irrigation, two documented techniques in the Han period, would have been critical to expanding the catchment size of these basins. Han settlements were also commonly surrounded by trees, which provided fuel, fodder cropping and shelter. Interestingly, the deforestation of pine occurring around c. 2000 BP at Lake Erhai is contrasted against an increase in certain

[2] This figure likely overestimates population totals as the count combines both Yichou and Yongchang commanderies.

deciduous taxa, which may reflect the development of this Han settlement practice (Shen et al 2006:275).

The impact of Han land use in the region should not be underestimated. According to several pollen cores in the province, sedimentation rates accelerated during this period to a rate 15 times higher than the natural erosion rates recorded in recent centuries (Sun et al 1984, Shen et al. 2006:275, Whitmore et al 1997). Soil erosion possibly increased the effects of flooding, leading to a deterioration of catchment stability.

The palynological evidence from these two contemporaneous regions provides one possible explanation into the site location trends between the Bronze Age and Han imperial period. If the Han burial sites were located in proximity to occupation sites, then the tendency for many Han period sites to be found on the floodplain as opposed to the foothill area of Bronze Age sites may be tied to a geographic strategy targeting arable and irrigable resources. Han tomb art found from many intermontane basins in Yunnan usually include a domestic clay model of a house built on piles, a depiction distinctive to the region. The Han pattern contrasts with earlier Bronze Age burial sites that are mainly located on terraces and upland slopes. Clarification on these two potentially different systems will have to await future regional survey.

SUMMARY

This chapter provided a spatial and temporal framework for the archaeological materials that comprise the data for this dissertation. Based on the current state of archaeological investigations, prehistoric activities in the region could date to as early as the Shang-Zhou period (15th c BC), possibly consisting of small rice growing communities. This characterization is based on recent work emerging from neighboring Guizhou province. If the radiocarbon dates from the basal deposits of Hengdalu and Pingpo are to be accepted, then the Bronze Age period could date as early as the 9th c. BC. However, according to the conventional chronological framework, the earliest known dates for bronze period sites are more conservative, placing the emergence of the Bronze Age around mid 8th c. BC (Spring Autumn period) (Yunnan Provincial Institute of Cultural Relics and Archaeology 1998:460).

Table 5.3: Distribution of primary cultural periods and their estimated temporal spans for the Qujing region

Periods	Estimated Dates
Neolithic	1500 BC ~
Incipient Bronze	900 BC ~ 750 BC
Bronze Age	750 ~ 109 BC
Historic / Iron Age	109 BC

The Historic period is marked by the post-Han conquest, which is evidenced by the introduction of Han goods across the eastern zone of Yunnan Province. In summary, the Qujing Bronze Age complex shows a continuous occupation of the alluvial basin from 900 BC until the Historic period. Thus, the region provides an important contrast to the "core" Dian zone in providing cultural activities that trace the formative developments leading up to the Bronze Age florescence. In chapters 7 and 8, I present a more refined periodicization of the internal chronological phases for Hengdalu and Batatai.

A second point of this chapter reiterated the need for a comprehensive survey of the region in order to better identify the political and economic system of the Qujing region. Without knowledge of the settlement site distribution, it is difficult to assess the scale of diachronic changes since mortuary contexts represent only one behavioral realm of the total cultural system. However, based on the distinctive artifact changes in the mortuary assemblage and the suggested landscape modification from contemporaneous regions, Bronze Age communities likely experienced significant local changes. With the archaeological background laid out, chapter 6 discusses the methodology for dealing with more specifically the different types of data variables in the mortuary assemblage and more importantly, material culture that is distinctly relevant to the Qujing region and associated with stratigraphically controlled contexts.

Chapter 6
The Coding and Classification of Grave Material Offerings

This chapter introduces the distinctive material types that comprise the grave offering assemblage in the Qujing Plain. In order to detect meaningful social behaviors within the mortuary ritual, the basic units of social analysis must be first identified. As a starting point, in order for objects to become mortuary offerings, the funerary participants must consciously recognize and identify an intrinsic value with the object that is likely manifested by a physical quality which is readily perceptible to the participants. *The main objective of the classification system is therefore to detect the recognizable and meaningful units (i.e., the minimal types) in the funerary program.* However, 'finer grained' levels of material variation may encode relevant social information for distinguishing between temporal and social units of production. *Thus, a secondary goal in the classification scheme is to detect variability internal to each minimal type and evaluate their significance based on their rate of occurrence in the mortuary assemblage.* These types are then evaluated against their spatial and temporal distributions in chapter 7 and 8 to determine their behavioral dimensions and social importance. In effect, the approach to classification is structured hierarchically, which initially targets the intuitive types followed by sequential evaluations of qualitative (stylistic) and metric attributes to determine variability at finer levels of detail.

Artifact types are first broadly divided into the following four categories based on raw material composition: ceramics, bronze implements including Chinese coinage, iron implements, and stone ornaments. Individual sections of this chapter will address the typological scheme of each raw material group and the hierarchical classification scheme developed for each primary minimal type. Each section presents a summary of the sub-variants within each primary minimal type and their proportional distributions within the overall assemblage and across the sites. It is hoped that the comprehensive nature of the

data presentation presents a complementary resource to the excavation report. Since it is nearly impossible for researchers to examine site materials in their entirety in China, the detailed nature of this chapter's descriptions makes this material accessible to the wider scholarly community. In addition to material assemblage from the sites of Batatai and Hengdalu, the overview also broadly surveys the Pingpo assemblage in order to present a more complete regional picture. Because the Pingpo materials were yet to be published at the time of data collection, the author could not directly analyze the materials.

CATEGORIES OF CERAMIC VESSELS

The majority of the ceramic vessels are easily recognizable forms identified in the descriptive typologies developed by the original excavators. The reconstruction of whole vessels allowed for the visual detection of distinct forms and morphological attributes, which the original excavators then used to identify and code incomplete vessels. In general, the ceramic assemblage can be divided into five distinct types (Figure 6.1) based on form and visual observation of the paste composition:

Tripods

Tripods (鼎*ding*) are restricted ceramic vessels with either a round or flat bottom body that is attached to three solid conical legs. The paste consists of a silty clay with high percentage of subangular quartz and silt inclusions ranging from 15 – 40 % inclusions.

Restricted Jars

Flared mouth beakers (喇叭口罐 *labakou*) are restricted jars with an outwardly flaring neck and mouth that exceeds the maximum diameter of the body. This is the only class of ceramic vessels that carries exterior design motifs, which consist primarily of incised horizontal lines on the neck and shoulder. The paste is of silty clay with few fine quartz inclusions.

Jars (罐 *guan*) are restricted vessels with an everted rim. Some vessels have a lid that rests on the interior the neck. The paste and texture is similar to that of the tripod vessel.

Other unique restricted vessel types have variable neck and body shapes that occur in low frequency across the sites. These types include high straight neck vases (壶*hu*), globular jars (圆复罐 *yuanfu guan*), and shouldered jars, all of which have pronounced constrictions at the neck. Shoulder jars have painted or incised designs along the shoulder.

Unrestricted vessels

Plates (盘 *pan* and 圆同心盘 *yuantongxin pan)* are small platters with either a flat or concave base. Concave base plates have a series of concentric rings on the base interior. Firing temperatures were extremely low, resulting in fragile vessels and very small sherds that could not be reconstructed. The paste consists of clayey silt with inclusions of rice chaff, quartz, gypsum and silt inclusions.

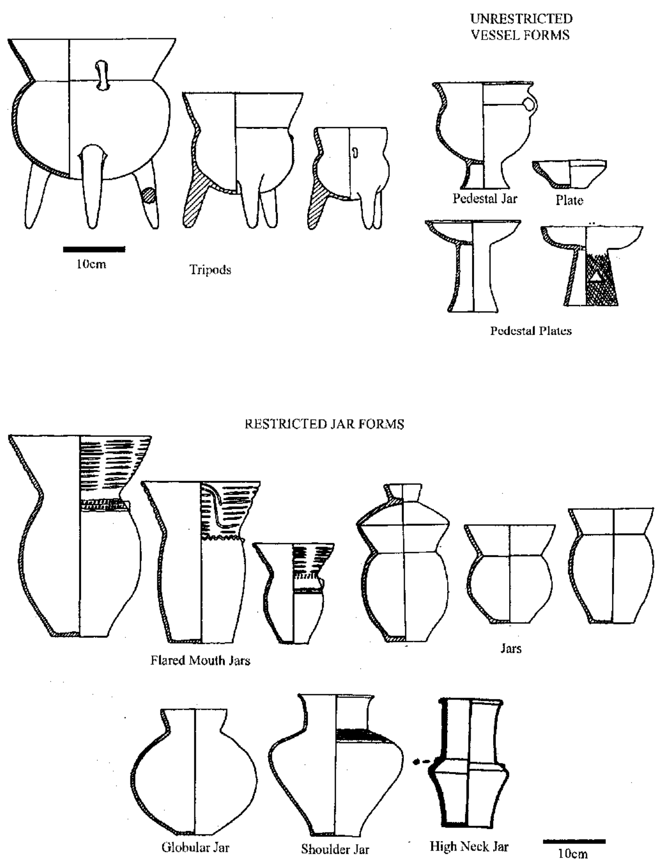


Figure 6.1. The ceramic assemblage of the Qujing Bronze Age.

Pedestalled vessels

Pedestal plates (豆*dou)* are unrestricted bowls elevated on a flared hollow footed base. The base often has cut out triangular patterns. The plates are usually black wares with a fine paste containing few inclusions and having a compact texture.

Pedestal jars (尊*zun*) are restricted vessels elevated on a short cylindrical hollow footed base. Some pedestal jars have one to two loop handles attached to the base of the neck of the vessel. The paste is sandy and the texture is fairly compact.

Examination of these vessel types across the sites shows both similar and contrastive patterns of distribution. Hengdalu contains 72% of the total ceramic assemblage, based on raw counts, suggesting the importance played by ceramic vessels in the composition of grave offerings at this site. Each vessel type is most numerous at Hengdalu, with the exception of the pedestal plate, which is found in greater numbers at Batatai (14 versus 4 at Hengdalu).

Tripod, flared beaker, and jars occur in similar proportional order at Hengdalu and Batatai. Specifically, as illustrated in Table 6.1, flared beakers occur in the highest frequency (Hengdalu 31.5%, Batatai 22.4%, Pingpo 74.2%), then tripod types (Hengdalu 27.9%, Batatai 20.9%), followed by jars (Hengdalu 15.2%, Batatai 20.4%, Pingpo 22.7%) and plates at the three sites. The site of Pingpo contrasts strongly with the other two sites in the absence of tripod vessels and predominance of flared beakers in the ceramic assemblage. In addition, Pingpo also has a low proportion of plates (Hengdalu 17.6%, Batatai 25.4%, Pingpo 6.2%) and comparatively high proportion of high neck jars (Hengdalu 2.9%, Batatai 2%, Pingpo 6.2%). The primary types and their subtypes are summarized in Table 6.15a.

Table 6.1: Frequency of ceramic types by cemetery site.

	Hengdalu N=188	Batatai N=342	Pingpo N=202	Total
Tripod	145 (27.9%)	42 (20.9%)	0	187
Flared beaker	164 (31.5%)	45 (22.4%)	72 (74.2%)	281
Jar	154 (15.2%)	41 (20.4%)	22 (22.7%)	217
Plate	90 (17.6%)	51 (25.3%)	6 (6.2%)	147
Pedestal Plate	4 (0.8%)	9 (4.5%)	0	13
Pedestal Jar	10 (1.9%)	0	1	11
High Neck	15 (2.9%)	4 (2.0%)	6 (6.2%)	25
Globular Jar	14 (2.7%)	4 (2.0%)	0	18
	596	196	107	899

Tripod coding and classification

Based on observations of reconstructed tripod vessels from Hengdalu and Batatai, the most visually recognizable source of variability was associated with different size classes (small, medium, and large). The coding approach for tripod vessels thus targeted variables that appeared to vary along size dimensions. The following metric variables were coded for reconstructed vessels: *vessel height, mouth diameter, maximum diameter, rim angle, rim thickness, neck height, base diameter* (if present), leg height, and leg width. Two descriptive variables were rim shape (eversion versus straight) and body carination (presence/absence). For incomplete vessels found in storage, I also coded the same variables from diagnostic sherd fragments. In general, measurements from the rim and leg sherd helped determine tripod size classes. I then checked my size identifications against the original excavator's list to verify consistency between the coding schemes.

Analysis of four main variables (vessel height, mouth diameter, maximum diameter and leg height) from reconstructed vessels revealed two distinct modal classes at Hengdalu. Analysis showed two ranges for vessel height at Hengdalu, one modal group at 16.0 cm and two outlier vessels greater than 25.0 cm. The histogram distributions for the three other variables also indicate a similar pattern with one predominant modal class and two outlier vessels with higher values. The metric attributes also had strong inter-correlation that was significant at the .01 level in a 2-tailed test. Pearson correlation values for the four variables were predominantly higher than 0.800: r=.885 between vessel height and mouth diameter, r=0.852 between vessel height and maximum diameter and r=0.813 between vessel height and leg height. These strong correlations suggest that the four variables co-vary along the same dimension that is directly related to size.

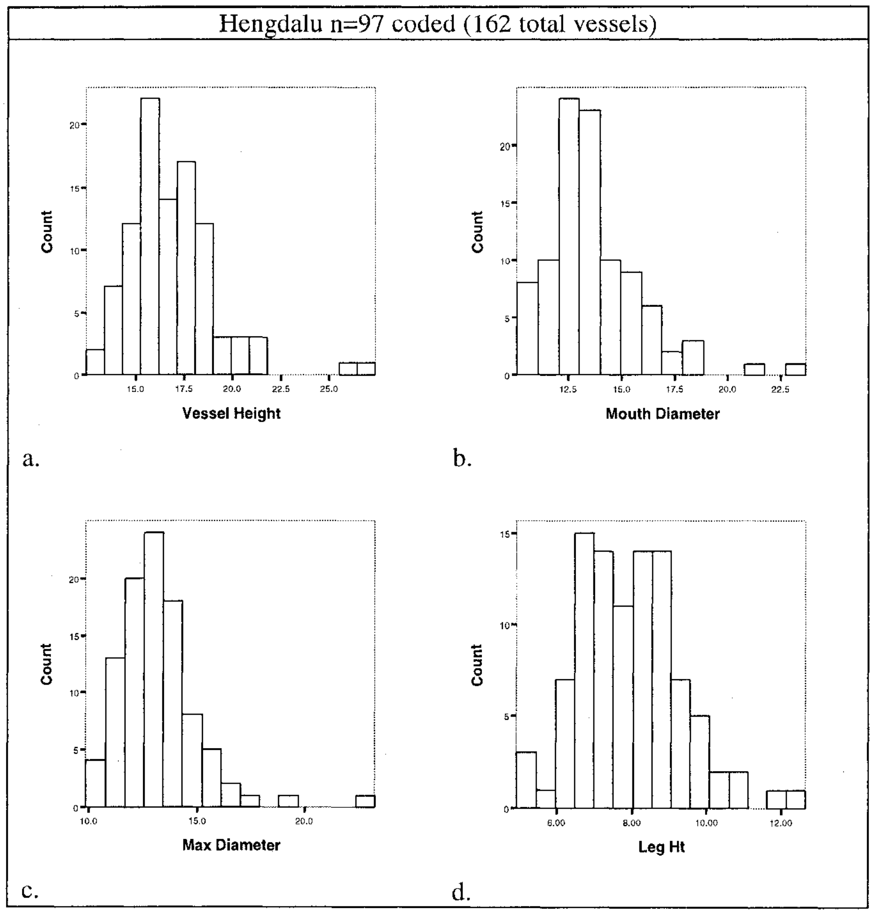


Figure 6.2a – d. Distribution of four metric variables on tripod vessels from Hengdalu.

The Batatai assemblage yielded three modal groups based on the same four metric attributes. Due to the small sample size, the modal breaks were less equivocal, as indicated by the lack of a middle group in leg height distributions. Incomplete vessels were therefore added to increase the sample size for analysis. The analysis shows three modal groups: <u>small tripods</u> ranging from 15.8 – 22.0 cm in vessel height, 14.3 – 20 cm in mouth diameter, 6.81 to 10.27 in leg height, 12.9 – 18.1 cm in maximum diameter, four <u>medium tripods</u> measuring about 24 – 27.0 cm in height, 21.8 cm in mouth diameter, 19.5 – 20.0 cm in maximum diameter, and, finally, one <u>uniquely large</u> tripod greater than 31 cm in height. In general, the medium size tripods at Batatai seem to correspond with the large tripod group at Hengdalu by vessel height. The strong covariation of these four attributes, vessel height with mouth diameter r=0.952, vessel height with maximum

diameter r=0.972, vessel height with leg height r=0.960 (significant at .01), still suggests that they represent a single dimension of variation relating to the size of the vessel.

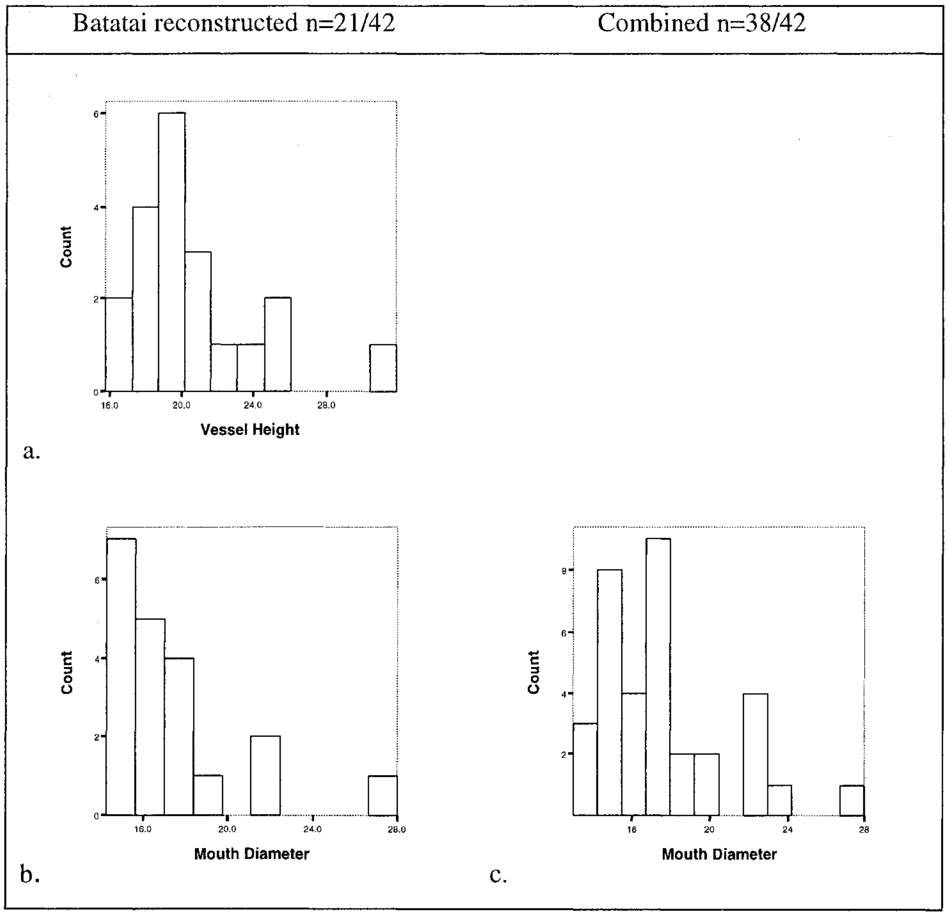


Figure 6.3a-c. Distribution of two metric variables on tripod vessels from Batatai.

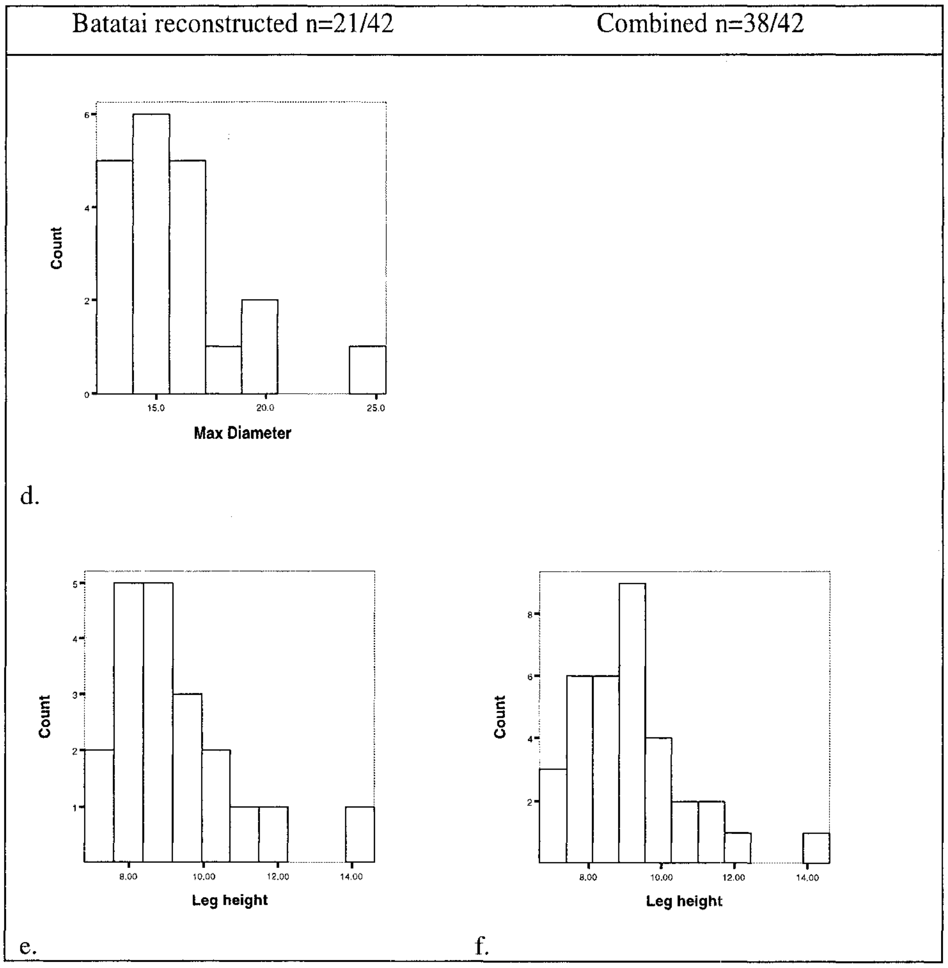


Figure 6.3d-f. Distribution of two metric variables on tripod vessels from Batatai.

The division of tripods into size groups represents the first stage of the hierarchical classification. Further attribute analysis divided the tripods into two groups based on the presence and absence of a flat base. Hengdalu yielded 40 tripods, of which 34 vessels could be coded for base form, while Batatai yielded only 9 vessels, which were all coded. Analysis of base diameter distributions produced unimodal distribution that coincided with vessels in the small size group at both sites. As well be discussed in chapters 7 and 8, flat base tripods appear to be a chronologically restricted.

Within the class of round bottom tripods, the presence of carinated bodies served as an additional attribute distinguishing vessel types. The carination is a fold that forms and accentuates the maximum diameter of the tripod body. The Hengdalu assemblage contains six carinated shape tripods and the Batatai assemblage contains five carinated tripods. Again, this shape profile type appears to be a chronologically restricted form.

Restricted form vessels coding and classification

Flared mouth jars

Like tripod vessels, size proved to be the most observable dimension of variation within the flared mouth beakers group of vessels. Thus, I focused on coding for metric variables relating to vessel size: *vessel height, mouth diameter, maximum diameter, height to maximum diameter, rim angle, rim thickness, neck height, neck width, and base diameter*. In addition, the length and width of incised line elements on the neck were also coded as metric attributes. I also coded the same variables from diagnostic sherd fragments of incomplete vessels.

At both Hengdalu and Batatai, *vessel height, mouth diameter, maximum diameter, neck height, neck width, and base diameter* proved to covary along the same dimension. Vessel height from reconstructed Batatai vessels (n=21) correlated strongly with neck height (r=0.821), neck width (r=0.687), mouth diameter (r=0.923), maximum diameter (r=0.962) and base width (r=0.887) at the .01 level. Vessel height from the Hengdalu assemblage (n=75) also correlated strongly with neck height (r=0.976), neck width (r=0.876), mouth diameter (r=0.967), maximum diameter (r=0.982) and base width (r=0.929) at the .01 level.

Three variables (*vessel height, mouth diameter, and maximum diameter*) produced stronger modal breaks and distinguished three size classes at Hengdalu and two size classes at Batatai. <u>Small beakers</u> range in vessel height from 7.50 – 15.0 cm, mouth diameters from 6.50 – 9.50 cm, and maximum diameters from 0 – 8.30 cm. <u>Medium beakers</u> range in vessel height from 15.0 – 20.0 cm, mouth diameters from 9.50 – 15.0 cm, and maximum diameters from 8.30 – 12.0 cm. <u>Large beakers</u> range in vessel height from 22.0 – 33.0 cm, mouth diameters from 16.0 – 20.0 cm, and maximum diameters from 12.0 – 18.8 cm. The distribution tables from Batatai show two size modes that correspond to the medium and large beakers at Hengdalu: a medium size beaker ranging from 17.40 – 20.90 cm in vessel height, 9.15 – 15.50 cm in mouth diameter, 10.30 – 14.30 cm in maximum diameter. Large beakers range from 23.40 – 30.50 cm in vessel height, 16.20 – 22.90 cm in mouth diameter, 15.50 – 18.30 cm in maximum diameter

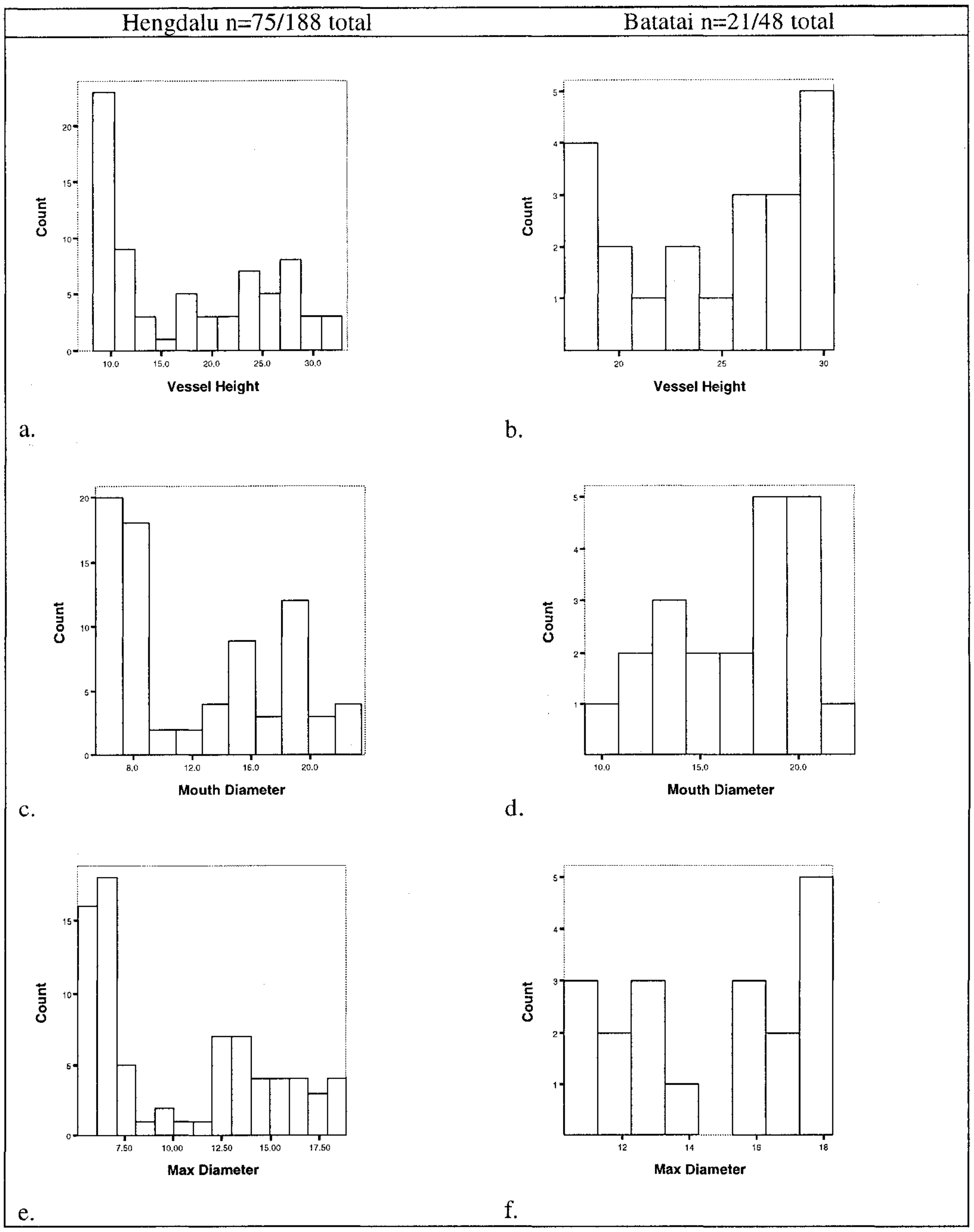


Figure 6.4a-f. Distribution of metric variables of the ceramic beaker.

When incomplete vessels were added to the Batatai sample (n=27), mouth diameter and base diameter distributions maintained the same bimodal groups. Based on excavator notes from the Pingpo site, three vessel height classes were also identified: a large beaker greater than 21.0 cm in height, a medium beaker ranging from 13.0-17.5 cm in height, and a small beaker measuring less than 13.0 cm in height. These distributions

are somewhat consistent with the sample ranges from Hengdalu and Batatai, thus supporting the basis of these three size groups.

Following the establishment of size classes, the second level of analysis further distinguished shape variation. Specifically, the analyses separated globular from straighter body profiles. Two ratios defined these two contours: maximum diameter/base width and neck width/base diameter approximately measured the shape or curvature of the body. The Hengdalu sample yielded two modal groups identified in Figure 6.5: max/base 1.25 to 1.80 and 1.80 – 2.50, neck width/base .90 – 1.40 and 1.40 – 2.00. The scatterplot shows that the two ratio variables are correlated along the same dimension. The small sample size from Batatai did not yield distinctive modal breaks that correspond to the groups from Hengdalu.

Examination of the incised design elements did not produce additional typological groups. In general, the array of design elements applied to the exterior surface is limited. All beaker vessels have incised horizontal lines arranged in columns covering the entire neck section. The length and width of these incised lines appeared to be visually linked to the size of the vessel. For the Hengdalu assemblage, there are roughly three modal groups in the distribution of incised line length and width: 0 – 2.30 cm, 2.30 – 5.20 cm, and greater than 6.0 cm (Figure 6.6). However, length of line appears to be more strongly correlated with vessel height (r=0.657) than width of line (r=0.463) at the .01 level. For the Batatai assemblage, the distribution of line length presented two possible modal groups, 2.50 – 4.10 cm and 4.50 – 6.00 cm. Vessel height also correlated with length of line (r=0.698) at the .006 level and was less strongly correlated with line width (r=0.552) at 0.10 level. This lack of correspondence between modal groups from Batatai and Hengdalu may be a result of sample size or alternately, may indicate variability between production groups.

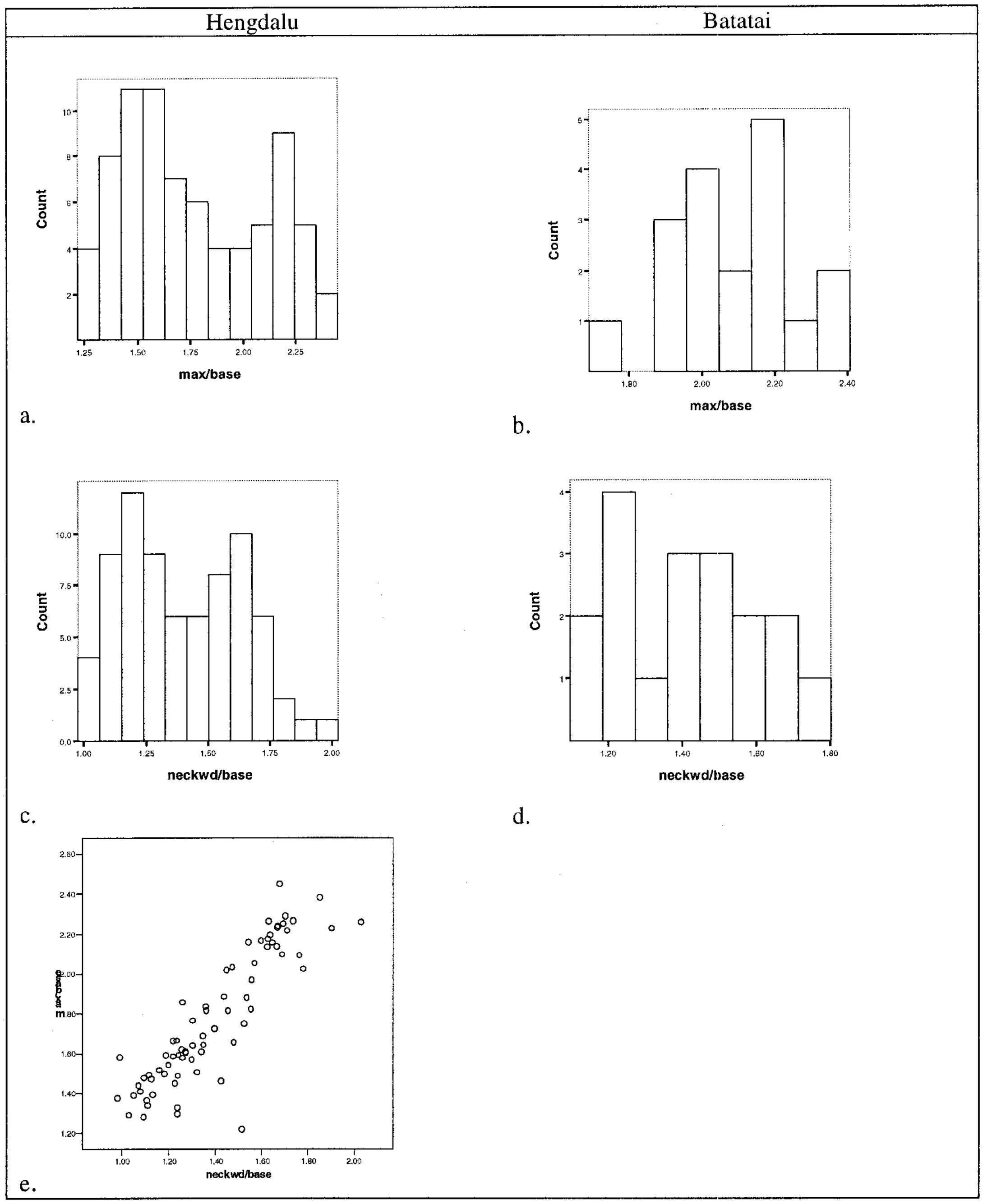


Figure 6.5a-e. Distribution of body proportions on ceramic beakers.

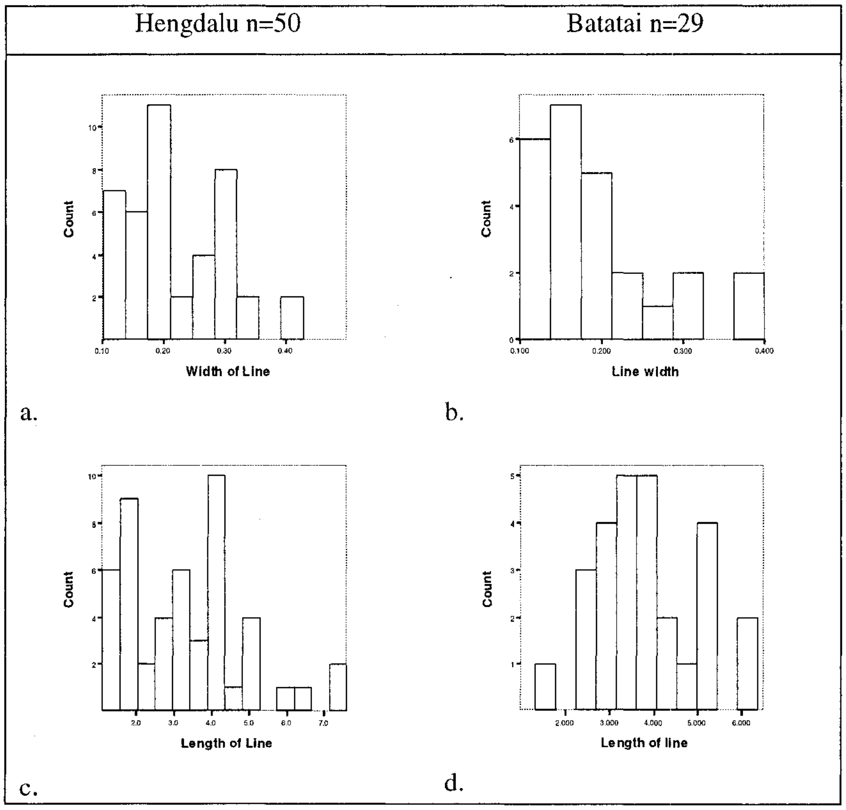


Figure 6.6a-d. Distribution of incision measurements on ceramic beakers.

Of the 50 coded vessels from Batatai, 22 (49%) vessels had additional incised decoration on the shoulder. Of the 75 coded vessels from Hengdalu, 45 (60%) had additional incised decoration on the shoulder. Seven unique design elements were coded for the shoulder region: line, wave, triangle, eyelet, punctuate, slash and reverse slash. These elements appeared on the neck and shoulder sections of the beakers either as singular units or paired with one other element. As illustrated in Figure 6.7, paired design motifs include: line and wave, line and slash, line and reverse slash, line and triangle, line and punctuate, or line and eyelet. The most common design patterns at Batatai were line and reverse slash (n=6, 27.3%) and line and wave (n=4, 18.2%) while the most common design patterns at Hengdalu were line and wave (n=6, 13.3%) and line and reverse slash (n=4, 8.9%). Other single and paired design motifs rarely occurred on more than one vessel, suggesting the absence of diagnostic style types.

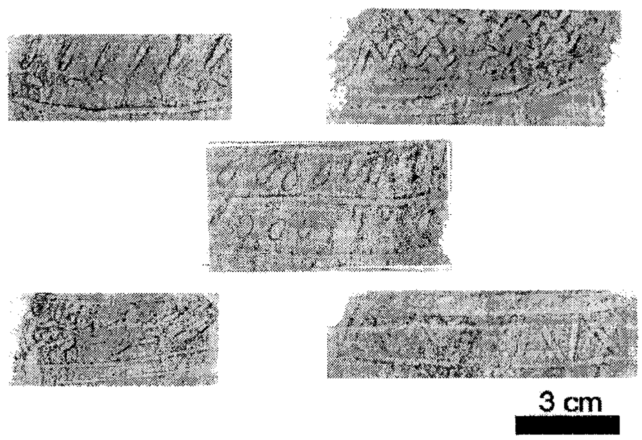


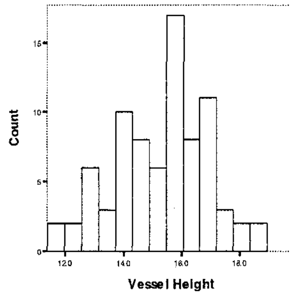
Figure 6.7. Incised elements on the flared mouth jars. From left to right: line and reverse slash (M162:2), line and wave line (M134:4), line and punctuate (M141:5), line and slash (M80:1), and line and triangle (M140:5).

Jar

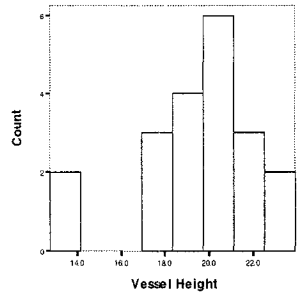
Jars are among the most commonly occurring class of vessels within the ceramic assemblage at all three sites. Vessels from all three sites have a sandy texture and tend to be friable. Ninety-four of 154 jars from Hengdalu and 34 (13 unreconstructed) of vessels from Batatai were examined. In general, jars are drum shaped with the maximum diameter at the mid-line of the body (Figure 6.1). The neck is constricted and the width of the body is relatively proportional to the mouth thus accounting for a more balanced shape. Five metric variables were coded: *vessel height, neck height, neck width, mouth diameter, maximum diameter, and base diameter.* As illustrated in Figure 6.7, three variables correlated strongly with vessel height: mouth diameter (Batatai r=0.849 and Hengdalu r=0.811), maximum diameter (Batatai r=0.778 and Hengdalu r=0.865) and neck width (Batatai r=0.563 and Hengdalu r= 0.707) all at the .01 level.

Distribution of metric attributes indicates a unimodal pattern reflecting one jar size class across both assemblages. The three correlated variables all show one modal group with a left skew generated by smaller size vessels (Figure 6.8). Comparison between the sites, however, shows that vessels from the Batatai assemblage tend to be larger in size than those from Hengdalu with a mean vessel height of 19.543 cm versus 15.17 cm. In effect, almost all jars from Batatai belong to a larger size group greater than 17.0 cm in height.

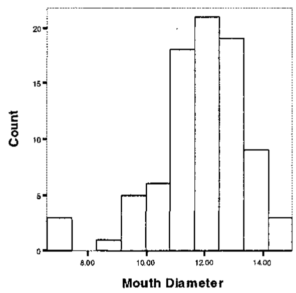
Hengdalu n=94/154	Batatai n=19/34



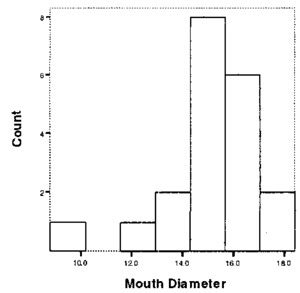
min 8.40 max 19.80 mean 15.17 std 2.063
a.



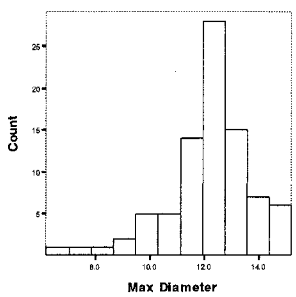
min 12.80 max 23.90 mean 19.54 std 2.6326
b.



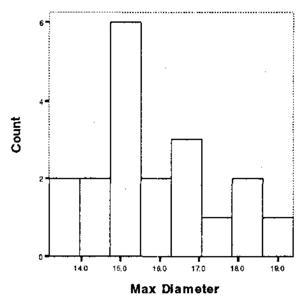
min 6.60 max 15.01 mean 11.89 std 1.59709
c.



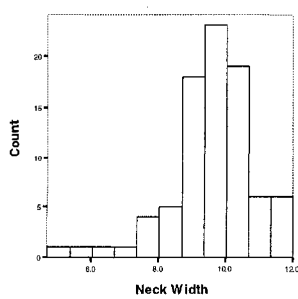
min 8.80 max 18.40 mean 15.04 std 2.0016
d.



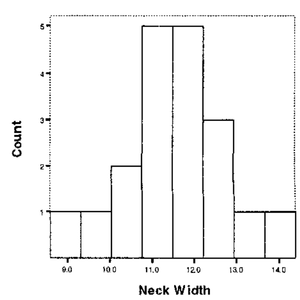
min 6.20 max 15.20 mean 12.16 std 1.62
e.



min 13.20 max 19.40 mean 15.88 std 1.64
f.



min 4.70 max 12.0 mean 9.57 std 1.29
g.



min 4.50 max 14.40 mean 11.123 std 2.09
h.

Figure 6.8a-h. Distribution of four metric variables on jars.

A further distinction contrasting the two assemblages is the addition of lids to eight jars (n=8) from Batatai. These vessels were coded separately as lidded jars.

Within the jar vessel type, ratio variables evaluating vessel proportions showed some patterning that may suggest shape formal differences. Neck width/mouth width measured the constriction of the neck while mouth diameter/maximum diameter ratio measured body proportions (Figure 6.9). Mouth diameter/maximum diameter for the Hengdalu assemblage showed two possible modal groups at 0.98 (range 0.90-1.02) and at 1.05 (range 1.02 – 1.10). Neck width/mouth width ratio values showed two modes at .75 (range .68 - .82) and at .85 (range .82 - .90). The two variables have strong negative correlations (r=-0.677 at .01 level), suggesting an inverse relationship: high value on one equates with low value on the other variable. Two possible shape types may consist of a constricted neck with fuller bodies (low neck width/mouth diameter value and high mouth/maximum diameter value) versus a straighter neck with a slimmer body (high neck width/mouth width value and low mouth/max diameter value). However, ratio values from Batatai did not indicate any group separation. The lack of more conclusive patterning at Batatai may be attributed to the small sample size. Nevertheless, this pattern recalls the proportional differences observed for the flared mouth beaker sample from Hengdalu, indicating variability in body proportions across two different types. As will be discussed in chapter 8, these proportional differences potentially reflect chronologically dependent types.

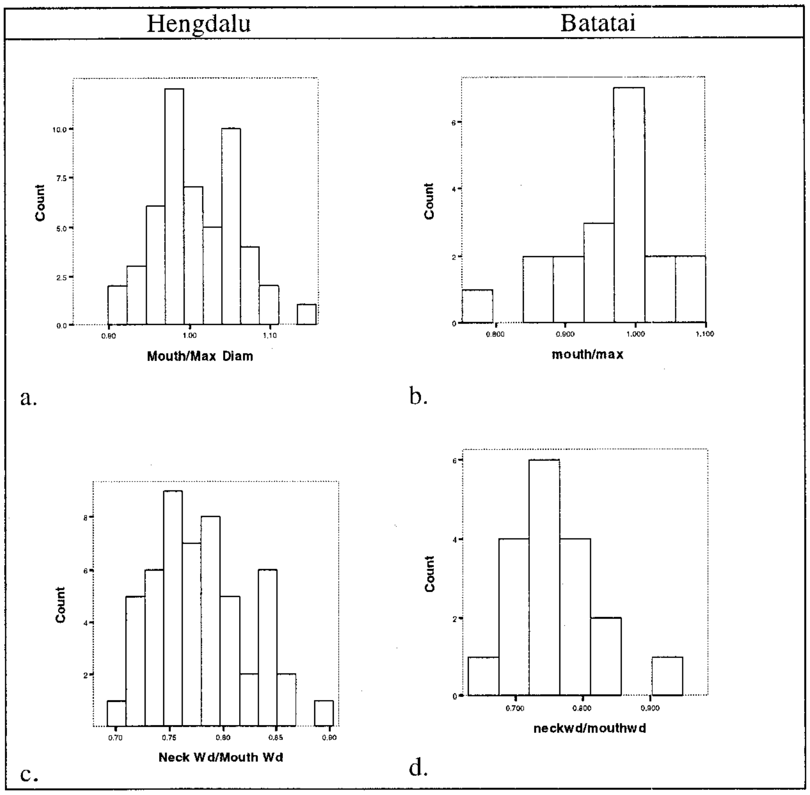


Figure 6.9a-d. Distribution of body proportions on ceramic jars.

Globular jar description

Globular jars are distinguished from jars by their exaggerated round bodies and marked constriction in the neck. In contrast to the general jars, the maximum diameter of the body can be twice the mouth diameter, thus accentuating the globular shape. In addition, the paste texture tends to be silty and compact in density. Globular jars also have additional embellishments such as small loop handles on the neck.

Table 6.2: Summary of metric variables for globular jars

	Minimum (cm)	Mean (cm)	Maximum (cm)	Std
Vessel height	12.90	17.78	24.70	3.9473
Neck height	3.19	3.62	4.71	2.3640
Neck width	6.89	9.57	14.90	2.8754
Mouth diameter	7.6	10.56	13.18	1.73598
Maximum diameter	15.3	17.51	20.40	4.0330
Base width	5.60	6.59	7.39	0.59985

Seven of the 14 known globular jar vessels from Hengdalu were coded for the following metric attributes: *vessel height, neck height, neck width, mouth diameter,*

maximum diameter and *base width.* In general, the mean vessel height for globular jars is higher than regular jars by 2.00 cm. In addition, rim angle appeared to be less everted than regular jars. The primary means for identifying unreconstructed globular vessels was by their paste composition and rim angle.

High neck jar description

There are only eight high neck jars in the assemblage. The two vessels from Batatai were examined and six vessels reported in Pingpo excavations are included here. High neck jars have a silty paste texture with a compact density. This vessel has a black polished surface and according to Pingpo excavators, it is wheel made. The high neck jar has a long cylindrical neck that comprises 40 – 50% of the total vessel height and reaches a maximum diameter at its distinctive shoulder. Based on excavator notes from Pingpo and measurements taken at Batatai, vessel height ranges are 12.10 - 20.0 cm, mouth diameter ranges are 6.0 – 9.60 cm, and maximum diameter ranges are 7.20 – 14.0 cm. Incised decorations are located on the neck and shoulder region. Motifs are more elaborate than those found on flared beaker vessels. In addition, two vessels have two appliqué nodules (乳丁 *ruding*) attached to opposite sides of the shoulder region.

Shoulder jar description

Very few shouldered jars were found at the three sites. I examined one shoulder jar from Hengdalu and one from Batatai. Based on the original excavators' classification scheme, shouldered jars are differentiated based on the location of the maximum diameter at the shoulder. Shouldered jars have straight necks and are decorated at the shoulder region. The vessel from Hengdalu has incised cross-hatch pattern, while the vessel from Batatai has elaborately painted motifs in red on the exterior neck and shoulder region. This is the only vessel from the Qujing region that is painted.[1] Because of the fragility of the sherd, I could not measure the sample. The rim and shoulder region are bordered by a solid red band and the zone between the two bands contain a row of triangles.

[1] For unknown reasons, the original excavators did not report this vessel or note the presence of painted vessels in the inventory.

Unrestricted vessel form coding and classification

Plate description

Plates can be broadly divided into two types: concave base and flat base plates. Both types appear to have a silty paste composition tempered with rice husk and a friable texture. Defining attributes of the flat base plate are an inner and outer rim, creating a stepped profile. In contrast, the concave base plate has an inverted base with concentric impressed rings and an outward flaring rim. These vessels range from red to tan in color. Unfortunately, metric attributes could not be taken on these vessels because their highly degraded prevented any direct handling of the sherds. Poor storage conditions in stacked shelves have led to extensive breakage of these vessels into clods that make the identification of individual attributes difficult. Thus, my classification is based completely on original excavator reports (Yunnan Provincial Institute of Cultural Relics and Archaeology 2001). According to the excavator reports, both vessel types range around 15.0 -22.0 cm in mouth diameter, 3.50 – 6.0 cm in base diameter, and 4.0 – 5.5 cm in vessel height. Of the 53 plates from the Batatai assemblage, 51 vessels were of the flat base type and 2 were of the concave base type. Of the 101 plates from Hengdalu, 97 were of the flat base type and 4 were of the concave base type. Only four plates of the concave base type were found at Pingpo.

Table 6.3: Distribution of flat and concave base plates across the three sites

	Flat Base	Concave Base	Total
Batatai	51 (32.3%)	2 (1.3%)	53 (33.5%)
Hengdalu	97 (61.4%)	4 (2.6%)	103 (65.2%)
Pingpo	0	4 (2.6%)	4 (2.6%)
Total	148 (93.7%)	10 (6.3%)	158

Pedestal plate description

Because of the low frequency of pedestal plates in the assemblage (n=13), the type is mostly defined by a formal description. Of the six reconstructed vessels (Hengdalu n=4, Batatai n=2), metric coding of *vessel height*, *plate diameter*, *base width* and *pedestal height* attempted to assess the most variable dimensions within the vessel type. In general, vessels are of similar height with the exception of one short pedestal plate measuring only 10.40 cm in height and 4.06 cm in leg height. The plate diameter to

base ratio indicated that this short vessel had a larger plate relative to its base, which may differentiate from the other vessel profiles.

Rim and foot profiles were also coded as flared versus straight. Four vessels have flared rims and three have straight rims, while seven vessels have flared base and three vessels have straight bases. The two attributes vary independently. Neither flared rims nor bases correlate with larger plate or base diameter values.

Table 6.4: Summary of metric variables for pedestal plates

N=13	Minimum (cm)	Mean (cm)	Maximum (cm)
Vessel Height (n=6)	10.40	12.58	14.3
Plate Diameter (n=7)	14.85	17.51	20
Base Width (n=6)	8.41	9.46	11.32
Stem/leg height (n=7)	4.06	7.70	10.45
Plate diameter/base diameter (n=6)	1.64	1.815	2.11

Pedestal jar description

Six of 10 reported pedestal jars from Hengdalu were coded and supplemented with data from the one vessel from Pingpo. In general, this class of vessels is defined by a bulbous shaped jar with an everted rim attached to a short pedestal foot. The vessels roughly resemble raised bowls and the paste texture tends to be sandy and compact. There may potentially be distinct size and shape types within this class of vessels; however, the small sample size only allows for a descriptive account of these morphological differences. Several metric attributes were coded (*vessel height, neck height, neck width, mouth diameter, maximum diameter, base width, height to maximum diameter, rim thickness, stem height* and *width*) and the most significant ones are summarized below. Most vessels range between 13.20 and 17.90 cm in height except for two small vessels, which are under 12.0 cm in height. Two vessels have loop handles on the neck and distinctive flared bases. The pedestal height of these vessels tends to be shorter than that of the pedestal plate. Identification of this vessel type from the unreconstructed sample thus relied primarily on the presence of a short stem sherd.

Table 6.5: Summary of metric variables for pedestal jars

N=11	Minimum (cm)	Mean (cm)	Maximum (cm)
Vessel Height (n=6)	11.4	15.11	17.90
Mouth Diameter (n=6)	11.13	12.82	15.88
Base Width (n=4)	4.61	5.93	8.32
Stem/leg height (n=5)	3.80	5.72	8.57

CATEGORIES OF BRONZE GRAVE GOODS

The bronze grave assemblage is comprised of a wide array of artifact types belonging to distinct functional categories such as *weaponry, ornaments, serving vessels* and *Han State coinage*. This section is targeted at identifying the primary functional types of bronze implements that constitute basic units in the mortuary assemblage. I organize the analysis of individual bronze artifact types along these functional categories. Because bronze artifacts are very fragile and of substantial value, direct handling of all objects was not possible. While I was able to examine nearly all bronze objects from the Batatai assemblage, data from Hengdalu and Pingpo were recorded from reports and illustrations. In the tables below, I indicate the total number of coded artifacts and the Institute's inventoried sums for Batatai. Those familiar with the Bronze Age culture of Yunnan will note the absence of bronze drums and cowrie shell containers in the inventory. While one bronze drum was found at Batatai, I have excluded it from the analysis because it was found in a highly disturbed deposit from mound 1, which had been extensively damaged prior to excavation. Description of this Wanjiaba type drum can be found in the excavation report (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:72-73).

Because the majority of bronze artifact categories occurred in low frequency, my classification relies primarily on formal variation rather than statistical distributions. Again, since size dimensions appear to be the most visually compelling source of variation among weaponry types, variable selection targeted attributes relating to implement size, but only for artifact types meeting a sufficient sample size. In addition to size variation, morphological and stylistic variation within types provided a secondary level of classification. While the sequential level of classification often yielded small samples that were not appropriate for significance testing, they were nevertheless considered as potentially significant for distinguishing between chronological periods. In chapters 7 and 8, I will rely on the occurrence of these types in the stratigraphic order as an independent means of chronological verification.

Bronze weaponry

Type distributions by site

There are thirteen distinctive artifact types within the bronze weaponry group. Weaponry can be further differentiated into categories based on distinct functional purposes such as hafted tools (halberd, pick, spear, chisel, and ax) for thrusting, projectile implements (crossbow and points), bifacial tools (sword and blade), protection (armour), and artifact transport or containers (sheath and quiver). As evident in Table 6.6 and Figure 6.10 below, halberd, blade, sword and spear are the most common bronze weaponry types. In contrast, weaponry containers and armor have extremely low occurrences. An impressive 87.1% of the total bronze weaponry assemblage is found at Batatai. In marked contrast, Hengdalu and Pingpo account for only 12.9% of the total weaponry assemblage, suggesting that these items were not widely available across the region and that their circulation may have been restricted.

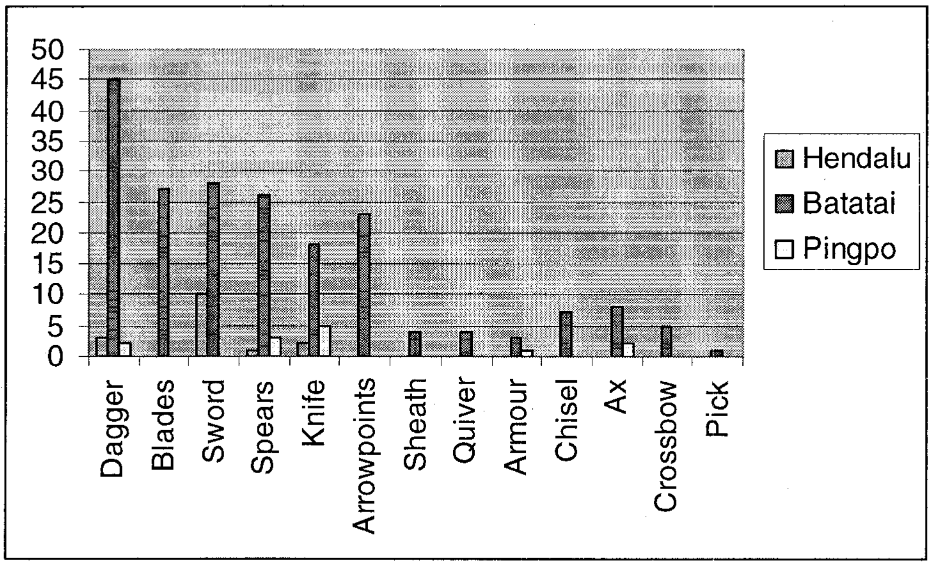


Figure 6.10. Histogram comparing the occurrences of bronze implements across the three site

Table 6.6: Distribution of different bronze weaponry implements at each site

	Halberd	Blade	Sword	Spear	Knife	Arrowpoint	Sheath	Quiver	Armour	Chisel	Ax	Crossbow	Total
Hengdalu	3 (6%)	0	10 (26.3%)	1 (3.3%)	2 (8%)								16 (7.1%)
Batatai	45 (90%)	27/28 (100 %)	28/32 (73.7%)	26/28 (86.7%)	18/27 (72%)	23 (100%)	4 (100%)	1/4 (100%)	3 (75%)	7 (100%)	8 (80%)	5 (100%)	196 (87.1%)
Pingpo	2 (4%)			3 (10%)	5 (2%)				1 (25%)		2 (20%)		13 (5.8%)
Total	50 (22.2%)	27 (12%)	38 (16.9%)	30 (13.3%)	25 (11.1%)	23 (10.2%)	4 (1.8%)	4 (1.8%)	4 (1.8%)	7 (3.1%)	10 (4.4%)	5 (2.2%)	225

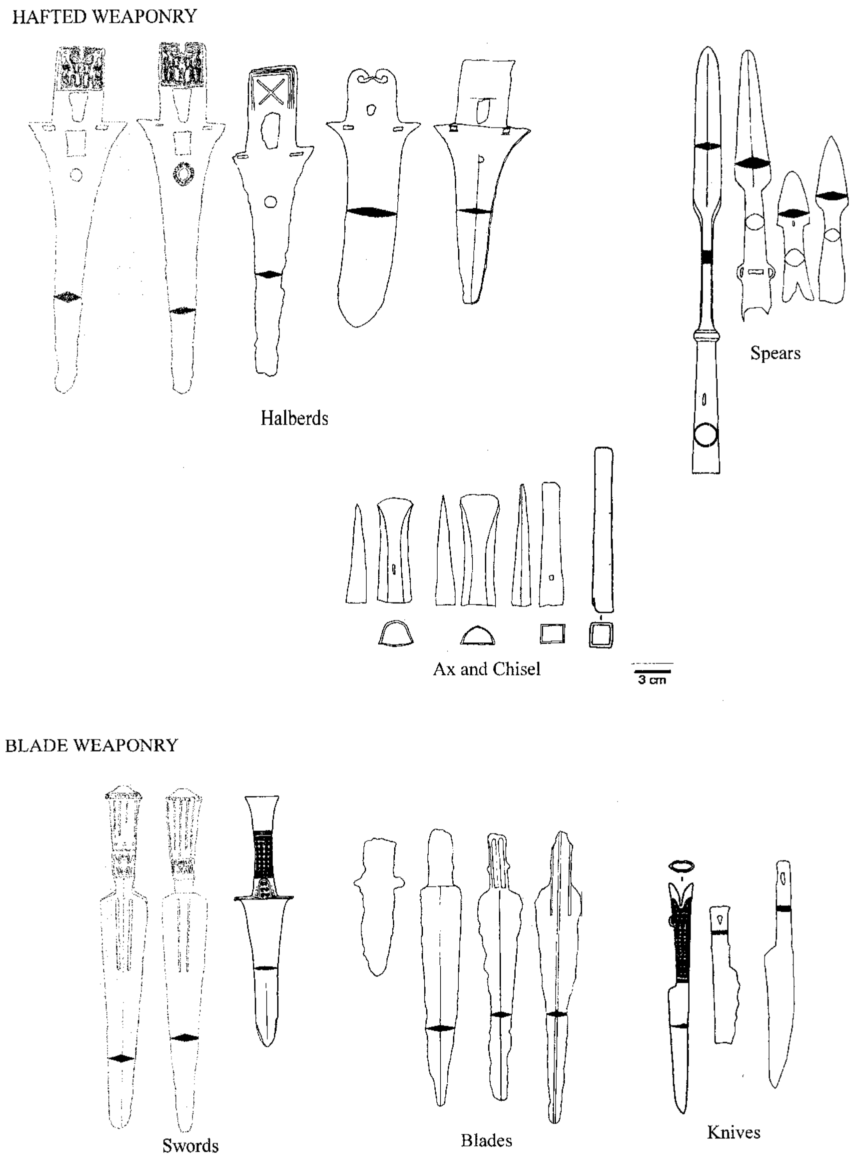


Figure 6.11. The different weaponry types and their subtypes. Halberds (from left to right consist of long blade with frog motif and crown hilt, square hilt, short blade with crown versus square hilt. Spears (from left to right) consist of long length type, medium length type with leaf shaped blade, short length type with concave versus flat base. Swords (from left to right) consist of long sword and short flaring sword. Blades (from left to right) consist of flat, nub hilt and raised groove types. Knife (from left to right) consists of hollow and flat handle types.

Halberd coding and classification

Halberds (戈 *ge*) are the most common bronze weapon in the assemblage (22.2%). The two components of the halberd are the blade and the flat hilt (Figure 6.11). The slotted square hole on the hilt and two small holes on the proximal end of the blade fasten and lock the implement into the handle. Distinctive designs are located on the proximal end of the blade and on the hilt and cover both faces of the implement. Metric variables recorded include *implement height, blade maximum and minimum diameter, thickness, hilt length and width, width and height of slotted hole* and *weight.* These attributes are intended to capture size variations in the sample.

Distributions of halberd length, hilt width, and weight indicated two modal groups suggestive of a long and short dagger type. Halberd height is strongly correlated with hilt width r=0.702 and with weight r=0.554 at the .000 level. Long halberds range between 28.80 – 33.0 cm in length, 8.0 -9.50 cm in hilt width, and 280 – 340 grams in weight. Short halberds range from 21.0 – 28.80 cm in length, 6.00 – 7.90 cm in hilt width, and 130 – 250 grams in weight. Two of three halberds from Hengdalu were of the larger type.

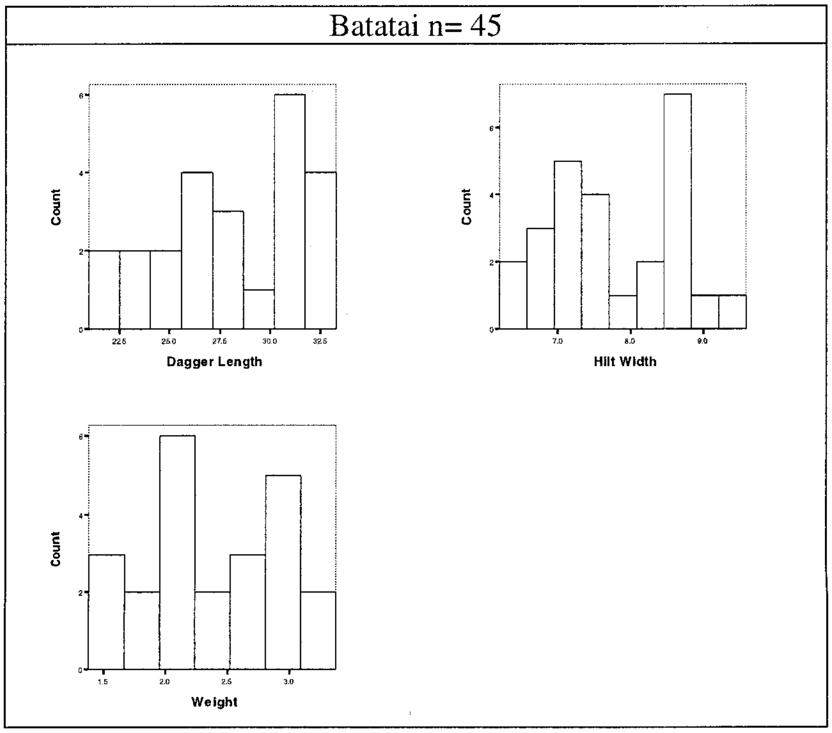


Figure 6.12. Distribution of three metric variables from bronze halberds.

Non-metric attributes mainly characterized observable variability in stylistic designs and blade and hilt shapes: five principle patterns occurred on the hilt (frog figures, cloud, mask, and plain; see Figure 6.11). In addition, I documented the shape of blade cross-section (spine versus ellipse), hilt shape (crown versus square). While the frog figure pattern showed consistent design arrangement across all samples, detailed circular markings in the hilt corners distinguished between halberds. These markings were paired arrangements of small circles, with different notations inside the circles: open, double circle, hatched, criss-crossed. Analysis of non-metric variables showed some correlations between hilt shape and design. 85% of halberds with frog figure design had a crown shaped hilt while square hilt halberds tend to have either the cloud or plain design. Blade cross-section is supposedly temporally diagnostic with the elliptical cross-section representing a later phase. Only eight halberds had this elliptical cross-section and their hilt design was restricted to either plain or frog pattern (Table 6.7). Of the three samples with frog design, all had a square shaped hilt.

Table 6.7: Frequency of co-occurrence between halberd hilt shape and design patterns

	Frog	Cloud	Plain	Mask	Other	Total
Square	3 (15%)	3(100%)	6(60%)	1 (25%)	2 (100%)	15
Crown	17 (85%)	0	4 (40%)	3 (75%)	0	24
Total	20	3	10	4	2	39

The assemblage is broadly divided into two major types based on size. Subtypes are then defined by stylistic and morphological divisions as summarized below. Most long halberds (n=16) have the frog figure motif and crown hilt while short halberds (n=24) are associated other kinds of design patterns and also with square hilts.

Long: Frog and crown hilt (n=14) — Other and square hilt (n=2)

Short: Frog and crown hilt (n=3) — Other and crown hilt (n=7)
Frog and square hilt (n=3, all with elliptical cross-section) — Other and square hilt (n=11)

The recurrence of the frog motif is not unique to the halberd. As will be shown, the frog design also occurs on the bronze sword and is associated with one of the two bronze picks in the Qujing assemblage. In addition, the frog motif occurs on bronze

drums found in Guangxi, Guangdong, and Northern Vietnam region. While the symbolic meaning of the frog motif has yet to be resolved, current debate concerns the possible ethnic identification of the design. Based on Chinese historical accounts of the Yue, Qiu (1993:133) argues that the frog design reflects a form of totemic worship specific to the Yue peoples living in this region. As discussed in chapter 3, the concept of a Yue ethnic group in ancient China remains poorly understood. Even if the motif is not emblematic of ethnic identity, the fidelity with which the design appears on weapons and other potentially status related objects indicates its symbolic importance.

Sword coding and classification

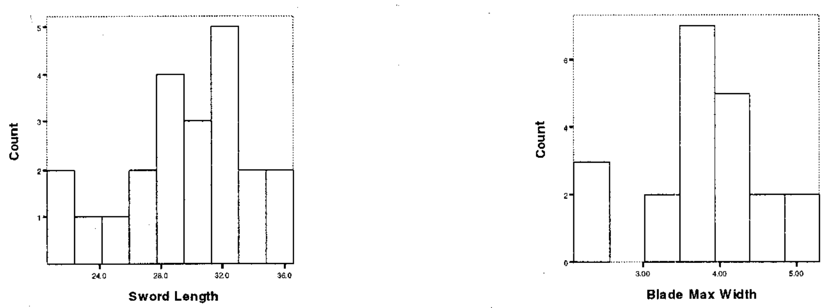
Swords (剑*jian*) also represent one of the more widely distributed types in the bronze weapon assemblage (16.9%). The three anatomical components of the sword are the blade, the hilt, and pommel. Observable differences in blade shape, the presence of hilt guard, and handle form divide swords into two distinct types: <u>a long triangular sword</u> (n=21) and <u>a short flaring sword</u> (n=7).

The <u>long triangular sword</u> (n=21) consists of a long blade with a ridge hafted into a handle that is capped by flower shaped pommel (see Figure 6.11). Decoration primarily depicting a frog figure pattern is located on the distal end of the hilt. Metric variables recorded include *sword length, blade maximum and minimum diameter, thickness, handle length and width,* and *weight*. Sword length were correlated with weight r=0.737, blade maximum width r=0.563, and less strongly with blade thickness r=0.527 at .001 level. These attributes are to capture size variations in the sample. Examination of sword length and weight distributions showed only one modal group, suggesting a single size category within the sample. There was limited stylistic or shape variation among the triangular swords. With the exception of one sword, all samples had the frog figure pattern and 14 swords had the flower shape pommel. All ten swords from the Hengdalu site are of this type, and are only distinguished by different handle designs.

The <u>short flaring sword</u> is visually distinct from the long triangular sword in the presence of a hilt guard. The sword type is 5.00 cm shorter as well as thinner and lighter than the long triangular sword. Because the sample is so small, no further numerical analyses were conducted. This type is also morphologically different in the absence of a

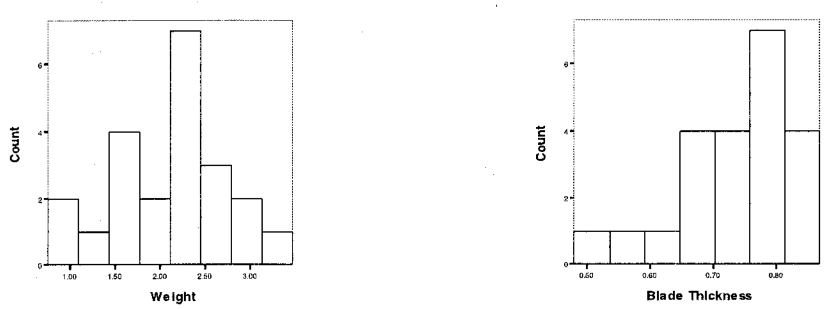
center ridge on the blade, recalling the elliptical variant within the halberd group. Design motifs focus on banded groups of spirals, rope and hatch work distributed across the full extent of the handle. Swords from this category do not carry the frog pattern.

Batatai n=21



a.
min 20.70 cm max 36.60 cm mean 29.621cm
std 4.2750

b.
min 2.10 max 5.30 mean 3.8110
std .82349



c.
min 76g max 348g mean 211.73g
std .66820

d.
min 0.48cm max 0.87 cm mean 0.7368 cm
std .09569

Figure 6.13a-d. Distribution of four metric variables on bronze swords.

Table 6.8: Summary of metric variable values for the bronze sword

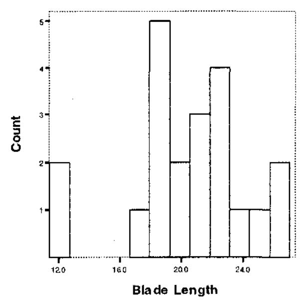
	N	Minimum	Maximum	Mean	Std. Deviation
Sword Length	6	22.2	26.5	24.162	1.6210
Blade Max Width	5	3.60	5.90	4.5460	.94105
Blade Thickness	6	.39	.88	.5400	.17933
Weight	7	1.12	2.30	1.4229	.41335

Blade coding and classification

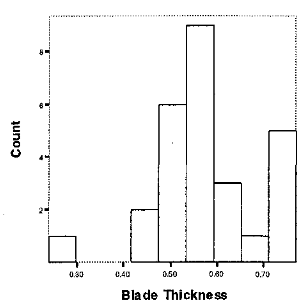
Blades (铍 *pi*) are unhafted double edged weapons that are both thinner and shorter in length than the triangular sword. Blades also contrast with swords in having a

diamond as opposed to triangular shape. Coded metric attributes include *blade length, handle length, maximum and minimum width, blade thickness*, and *weight*. Blade thickness and weight correlated strongly with blade length, *r*=0.692 and *r*=0.920 respectively at the .001 level. The distributions of these variables indicated three possible modal size groups: two small blades less than 13.0 cm in length, a large "normative" size 16.50 cm – 23.20 cm, and a longer blade greater than 24.0 cm in blade length. Closer examination of the composition of each modal group however showed that the variables did not co-vary. A long blade did not necessarily fall into the "high" modal group for blade thickness and weight, thus making the classification of a normal versus long blade type tenuous. Only the small blade category can be visually substantiated.

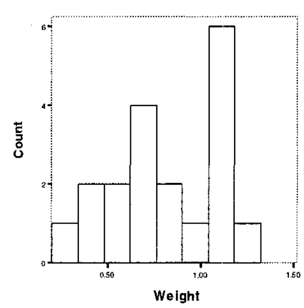
Batatai n=27



a.
min 11.40 cm max 27.40 cm mean 20.563cm
std 4.0309 n=24



b.
min .24 max 0.77 mean 0.5752
std 0.11386 n=27



c.
min 20g max 152g mean 84.52g
std 0.35805 n=27

Figure 6.14a-c. Distribution of three metric variables for the bronze blade.

Examination of non-metric variables identified formal differences suggestive of unique types (see Figure 6.11). For instance, the thickest blades corresponded to

specimens with a raised groove on the center ridge of the blade (Table 6.9). This type is noted by a cross-section resembling a *cross* as opposed to a *diamond.* In addition to blade cross-section, I also coded for the presence/absence of both nubs and grooves on the handle. Specimens with the cross-shape blade profile were also the only samples with side grooves on the handle. The blades of these four objects also yielded the highest cross-section thickness. I tentatively defined this type as raised groove blades. Blades with a diamond-shape profile included those with nubs on the handle and those with plain flat handles. The remaining four blades were either unidentifiable or unique. I tentatively divided these morphological co-variations into three tentative types: raised groove blades (n=4), nub-hilt blades(n=5), and flat blades (n=7).

Table 6.9: Frequency of co-occurrences between types of blade cross-section and hilt design

Cross-section	No Nub	Nub	Side Grooves	Total
Diamond	7	5	0	12
Cross	0	0	4	4
Total	7	5	4	16

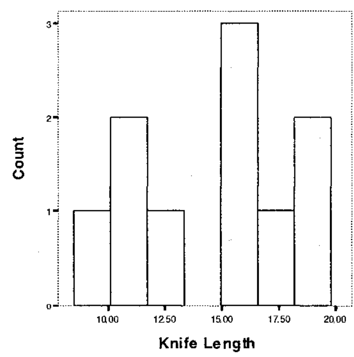
Knife coding and classification

Knives (削*xiao)* are single edge blade implements that are shorter in length than blades. Eighteen of the 22 inventoried knives from Batatai were examined while specimens from Hengdalu and Pingpo excavation reports supplemented the analysis. Two visually perceptible differences separate the knife assemblage into a curved blade type (Batatai n=4, Pingpo n=1) and a straight blade type (n=14). Decoration is limited to the handle portion of the implement and the design patterns are unique. They represent serpent head, fish spine, bands of spiral rows and others. Curved blade lengths measured 20.55 – 21.18 cm, 0.60-1.00 cm in maximum blade width, 7.35 – 7.60 cm in handle length, and 60 - 98 g in weight.

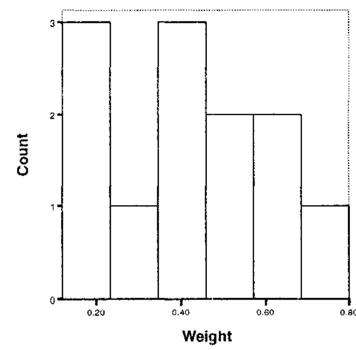
Within the straight blade assemblage, handle form and its cross-section shape further subdivided the assemblage into solid handle (Batatai n=12, Pingpo n=1, Hengdalu=2) and hollow handle (Batatai n=2, Pingpo n=1) types. Solid handle knives (n=10) showed two distinctive size categories in knife length, 9.0-12.20 cm and 15.0 – 19.80 cm. However, other metric attributes failed to show these two modal groups. The

absence of stronger group separation is likely due to the small sample size thus I conclude one category of solid handle knives.

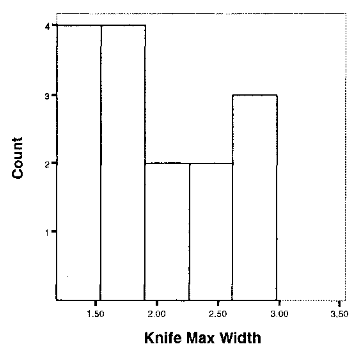
Combined Assemblage for Straight Blade Knives



a.
min 7.85 max 20.74 mean 14.9885
std 4.18151 n=15



b.
min .12 max .80 mean std 4.18151
n=12



c.
min 1.18 max 2.70 mean 1.8367
std 0.52959 n=14

Figure 6.15. Distribution of three metric variables on the bronze knife.

Spear coding and classification

Spears (矛*mao*) consist of two parts, a solid bronze projectile tip and a haft that is hollow on the interior. I examined 26 spears from Batatai and coded the following metric attributes: *spear length, tip length, tip width, tip thickness, height of haft, base diameter* and *weight.* Spear length correlated strongly with tip length (r=0.914), tip thickness (r=0.592), base height (r=0.955) and weight (r=0.918) at the .002 level. Three size groups appeared in the distribution of spear length: 10.0 – 20.0 cm, 20.0 – 28.0 cm and greater than 30.0 cm. Two groups appeared in the distribution of tip height, 4.0 –10.0 cm

and 10.0 – 15.50 cm. Similarly, two possible groups were identified for base height and spear weight. In general, two particularly long spears represented the outlier group or right skewed distribution on all four variables. I defined this group as the long spear type.

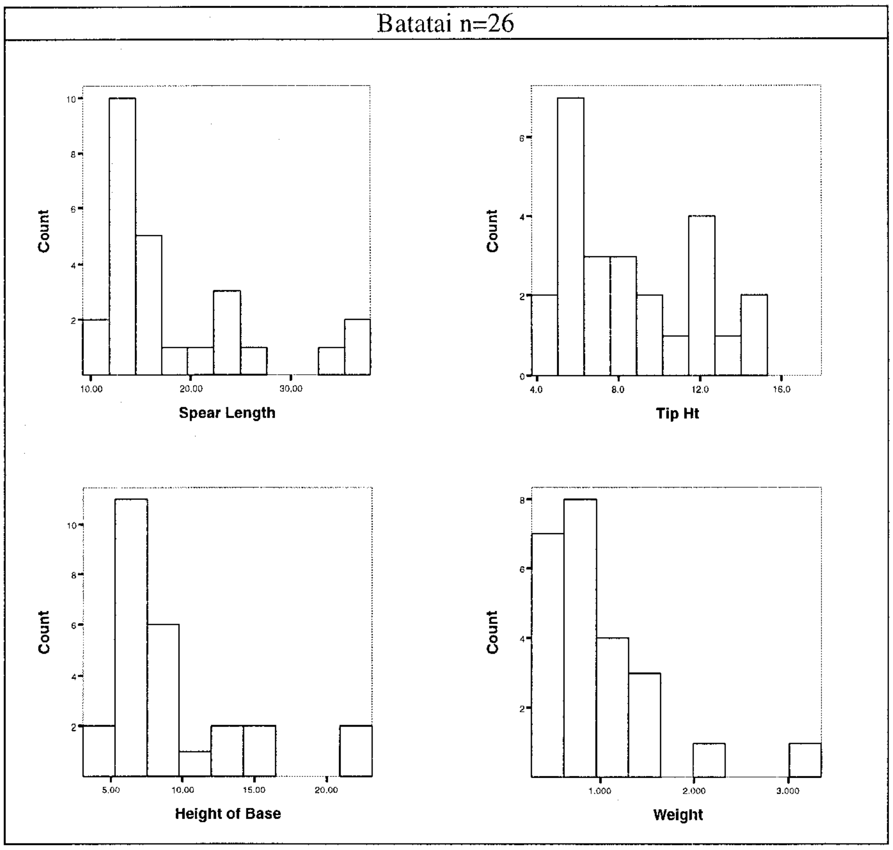


Figure 6.16. Distribution of four metric variables on the bronze spear.

The remaining two size modes are further distinguished by differences in the shape of the base (flat versus concave), tip (leaf, triangular, rectangular), and tip cross-section (diamond versus cross). Since tip cross-section appeared to correlate with tip shape such that leaf shaped spears all had the cross-shape profiles while triangular shaped tips had the diamond shaped tip, I further define medium and short length spears into leaf versus triangular shaped tips (see Figure 6.11). The types are summarized as short triangular tip spears with either a concave (n=9) or flat base (n=4) and medium tip spears with either a leaf (n=2) or triangular shape tips (n=7). The samples from Pingpo (n=3) and Hengdalu (n=1) were classified according to the same scheme.

Ax and chisel description

Because of the low occurrence of bronze axes (斧*fu*) and chisels (凿*zao*), the classification of these two artifacts relies primarily on non-metric attributes. Compared to chisels, axes are shorter in length and have only one working edge that is of greater width than the chisel. The eight axes from Batatai measured 7.10 – 16.30 cm in length and 590 – 1120 g in weight. Chisels are longer in length and taper from the haft toward the working edge of the implement such that the minimum width is located at the working edge. Close examination of Batatai examples indicates use-wear on both faces of the chisel blade. The five chisels from Batatai measured 13.0 –16.50 cm in length and weighed 640 – 1310 g. Chisels are heavier than axes, with a mean weight of 988.2 g versus 821.0 g for axes.

As shown in Figure 6.11, this class of objects were primarily classified by socket shape (square, ovoid, semi-circular). Three axes had an <u>ovoid socket</u> with a hexagonal blade profile. Four axes had a <u>semi-circular socket</u> and one ax had a <u>square socket</u> and square blade profile. Two ovoid socket axes have decorations on the proximal end of the blade repeating the frog figure motif and serpent head design seen on other implements. The other types do not have any decoration. Two chisels had the square socket while the remaining three had ovoid shaped sockets.

Pick description

The bronze pick (啄*zhuo*) is a rare implement with Batatai yielding the only two documented samples from Qujing (see Figure 6.17). Picks have one thin long blade set perpendicular to a hollow ovoid shaped socket haft. The blade and haft are manufactured from a one-piece mould. Because one of the samples was found from the disturbed deposits of mound 1, only one sample (Cat # M178:17) will be described here. In the Lake Dian Bronze Age cemeteries, picks tend to be preferentially distributed, occurring with more elaborate burial assemblages associated with elite status (Yao 2005). The pick from Batatai has a decorated socket depicting three bands of frog figure pattern and the proximal end of the blade has "bird" face design commonly associated with bronze

plaque buckles. The pick blade measures 20.50 cm in length and the haft measures 12.40 cm in length.

Crossbow and arrowpoint description

Because arrowpoints (镞*zhu*) could not be located in storage, I will define the types based on the excavation report from Batatai (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:66). Four types are defined based on the shape of the tip: <u>three prong</u> (n=5), <u>tube shaped</u> (n=2), <u>leaf shaped</u> (n=10), and <u>tanged</u> (n=6).

Crossbow mechanisms (弩机*nuji*) are imports from the Han State as they match those distributed in the Central Plains region (see Figure 6.17). They consist of three

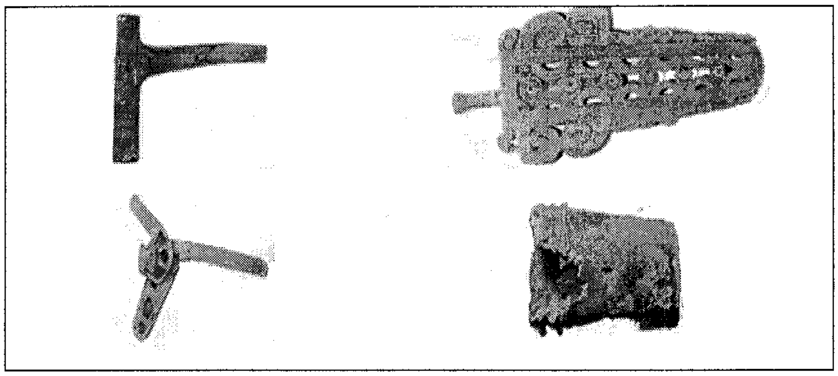


Figure 6.17. Bronze implements with low frequencies. Clockwise: bronze pick, sword sheath, quiver, and cross-bow.

components, the hook, the teeth, and the lever, which together form a lock and release mechanism. Three samples were found at Batatai (Cat # M30:1, M27:2 and M4) and one surface find from Pingpo. Cat # M4 was found from the disturbed deposits of mound 1.

Sheath, quiver and armor description

Because of the singular nature of these items' occurrence, I will briefly describe each object. I did not further classify each artifact group. Batatai yielded six bronze sword sheaths of which four (Cat # 183:8, 246:2. 279:6, and 69:14) were examined. The exterior design on the four objects consists of a rectangular frame with a pattern that is outlined with curving double -headed serpents. Inside the rectangular frame are circular pendants arranged in alignment along the midsection of the framed area and connected by

the interlinking bodies of the serpents. One of the undocumented samples was from a surface collection. The four sheaths were all remarkably standardized in size; all measured 28.50 cm in height, 14.0 – 14.50 cm in width and 0.30 cm in thickness. While this regularity in size dimensions points to possible craft specialization, object weights varied dramatically from 258 and 546 g. Certain sheaths only contained half the amount of bronze! Given this small sample size, one can only speculate on the possible reasons accounting for this production difference. Nevertheless, what is perhaps most interesting is that no previous observations on bronze content disparities in bronze manufacturing have been documented in the Dian material assemblage.

Batatai yielded four quivers, of which only one (Cat # M279:12) could be found in storage. It is oval shaped container measuring 12.60 cm in length, 3.40 cm in width and 82 g in weight. On the surface of the quiver is a design pattern presenting two opposite facing serpents joined by a frog figure in the middle.

Armor (避甲 *bijia*) pieces from three burials were found at Batatai and examined (Cat # M27:5-1 and 5-2, M279:11, and M143:5). Armor is created by sewing together thin bronze sheets to form a protective covering for the arm or leg. The corners of the individual sheets or plates have drilled holes that measure between 0.10 - 0.20 cm in diameter. The armor pieces measure 15.60 – 18.60 cm in length and less than .20 cm in thickness. The four armor fragments weigh between 132 – 170g.

Bronze piece mold

Two stone molds for bronze objects were found in two burials at Batatai. The molds consist of a top and bottom section. One mold appears to be for the manufacture of hairpins (簪*zan*) (Cat #M15:4) and the other set is geared for the manufacture of pellets (丸*wan*) (Cat. #M69:14).

Bronze serving ware

Bronze serving ware constitutes a small percentage of the bronze assemblage. No bronze serving vessels were recovered from Hengdalu. The preferential distribution of these vessels to the Batatai (77.8%) site conforms to the same pattern witnessed for

bronze weaponry (Table 6.10). In classifying these vessels, I follow the conventions established by the original excavators since all bronze vessels, with the exception of the cauldron, are identified as Han imports. Their typology accords with established Han types excavated from standard Han burials in the core region.

Table 6.10: Distribution of bronze serving ware types across the three sites

	Cauldron	Pot	Cup	Bowl	Vase	Basin	Total
Hengdalu	0	0	0	0	0	0	0
Batatai	8 (72.7%)	7 (70%)	2 (100%)	2(100%)	1 (100%)	1 (100%)	21 (77.8%)
Pingpo	3 (27.3%)	3 (30%)					6 (22.2%)
Total	11	10	2	2	1	1	27

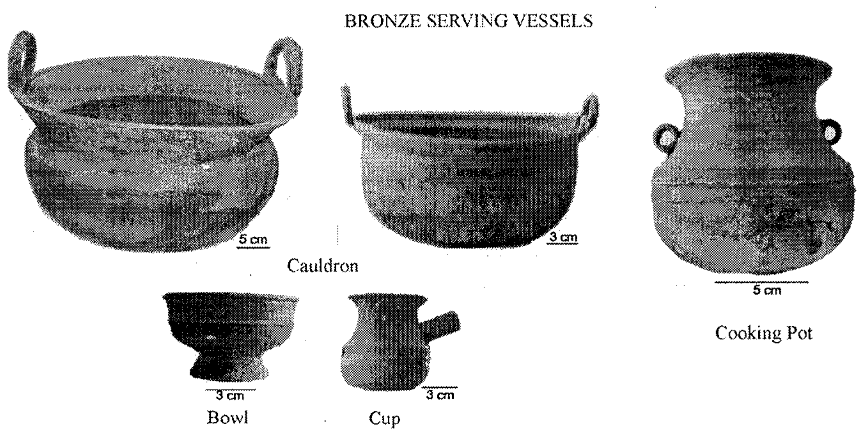


Figure 6.18. The different bronze serving vessels in the Bronze Age assemblage.

Cauldron description

The cauldron (釜 *fu*) is divided into a restricted and unrestricted type. The restricted form (Batatai n=3) consists of a globular body and a high rim. Two solid handles extend from the neck to the shoulder. This type is probably locally produced because the mode of manufacture corresponds to the weaponry types. The body usually exhibits a seam from the mould-join and the body thickness tends to be thinner (0.13cm) than the unrestricted type (0.20 cm). Vessel height ranges from 19.40 - 28.90 cm, mouth diameter from 27.0 – 34.0 cm, maximum diameter from 24.5 – 37.5 cm. The unrestricted from (Batatai n=5, Pingpo n=2) consists of a wide squat body and a short everted rim. Two "rope" shaped circular handles are attached in an upright fashion to the top of the rim. Vessel height range 12.80 - 24.90 cm, 25.50 - 41.70 cm in mouth diameter, 23.90 -

40.10 cm in maximum diameter. The base of the vessel has three to four small protruding nodules.

Han import wares

Cooking pots

Cooking pots (鍪 *mou*) are the next most common type of bronze vessels. They consist of a round bottom, an elongated neck leading to an everted rim, and two small hoop handles on the shoulder or lower neck region. Banded "raised" grooves encircle the shoulder region (see Figure 6.18). Five of seven vessels from Batatai were examined and measurements from two Pingpo pots were recorded from excavator drawings and notes. They range in vessel height from 12.70 – 19.8 cm (mean 16.77 cm), mouth diameter from 10.90 –20.0 cm (mean 17.03 cm), maximum diameter from 14.0 –23.90 cm (mean 20.01 cm), and weight from 640 – 2030 g (mean 1.39 kg).

Cup

Cups (杯*bei*) are miniature versions of the cooking pot but with only one hoop handle. Two vessels were found at Batatai (Cat # M49:3 and M6:1). They range from 7.60 – 8.70 cm in height, 7.20 cm in mouth diameter, 7.20 – 8.10 cm in maximum diameter, and weigh 250 g. One vessel has a soldered long handle.

Bowl

Bowls (碗*wan*) are small, unrestricted vessels with a footed base. I only examined one of the two vessels from Batatai (Cat # M8:2). The bowl measured 7.30 cm in height, 11.60 cm in mouth diameter, 7.10 cm in base diameter, and weighed 170 g.

Basin

Only one basin (洗*xi*) was found from the Batatai site (Cat # M69:11). The basin has a similar shape to the bowl but is twice as large in size. It has a characteristic Central Plains phoenix head design with a hanging ring hoop. The basin measured 11.90 cm in height, 23.20 cm in mouth diameter, and 13.20 cm in base diameter (76).

Vase

Only one vase (壶*hu*) was found from the Batatai site (Cat #M69:13). The vessel has a long neck and a squat body on a footed base. The entire exterior body is covered with incised bands of alternating design motifs. This vessel measures 29.3 cm in height, 6.20 cm in mouth diameter. According to Huang Derong (personal communication 2007), this vase has a very unique shape not present in the Central Plains during the Han period. This type of vase has only been discovered in one other burial in China, a wealthy Western Han grave in Guangxi province, which is adjacent to Yunnan (Guangxi Zhuang Autonomous Region Archaeology and Cultural Relics Team 1972:24).

Bronze Ornaments

Bronze ornaments consist of decorative waist/belt fasteners and wrist bangles. The ornamental function of these objects is informed by the visual depictions from cast bronze figurines excavated from Bronze Age sites in the Dian area and the objects' location with respect to the layout of the body. As shown in Table 6.11, most of the ornaments are again concentrated at the Batatai site. All ornaments are presumably of local origin with the exception of the belt hook, which is associated with conventional Central Plains dress style. The table below indicates the examined samples and excavator's inventoried totals.

Table 6.11: Distribution of bronze ornament types across the three sites

	Bangle	Buckle	Button	Belthook	Equestrian	Total
Hengdalu	7 (17.5%)	3 (10%)	5 (10.6%)		1	16
Batatai	33 (82.5%)	23/24 (57.5%)	42 (89.4%)	12/17 (54.5%)		110
Pingpo		4 (13.3%)		10 (45.5%)	1	14
Total	40	31	47	27	2	146

BRONZE BELT ORNAMENTS

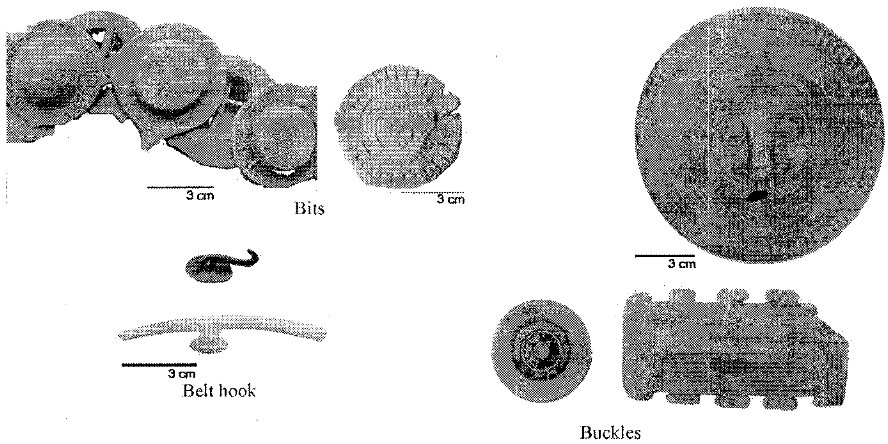


Figure 6.19. The different bronze ornament types in the Bronze Age assemblage. Clockwise: bronze bits or buttons, animal face buckle, rectangular plaque buckle, turquoise inlay buckle and Han belt hooks.

Bronze buckle

Bronze buckles (扣饰*koushi*) consist of a bronze plaque ornaments depicting various design motifs on one surface and a hook fastener on the back (see Figure 6.19). Buckle types are distinguished by the type of motif rendered on the plaque surface. The four main types are: round animal face buckles, turquoise inlay buckles, rectangular plaque buckles and other figurine shape buckles.

Round animal face buckles are the most common types found at Batatai (n=13) Hengdalu (n=3) and Pingpo (n=2). The design consists of a centrally placed anthropomorphic face (sometimes referred to as lion or monkey) that protrudes outward. Surrounding this face are bands of decorative motifs composed of s-shape chains, linked spirals, or linked serpent heads, which are enclosed by an outer band of geometric shapes placed in a radiating pattern. The combined buckle assemblage (n=15) ranges from 5.80 – 16.00 cm in diameter with a mean of 10.11 cm.

Turquoise inlay buckles (Batatai n=4, Pingpo n=2) consist of a circular plaque that has small cut circular or square turquoise stones glued to the face of the buckle. The turquoise stones are arranged in a radiating pattern from a center. The buckles range 5.0 – 18.60 cm in diameter, with a mean of 12.35 cm. One such plaque from Batatai has an oxen head affixed to the center (Cat. #M41:4). Rectangular plaques (Batatai n=3) have a raised or grooved midline that is framed by lines around the perimeter. Other figurine

buckles are modeled after oxen head (Cat. #M91:2), peacocks (Cat. #M100:1), fish (Cat. #M94:3), and even a house model buckle (Cat. #M143:1).

Bronze button

These ornaments consist of a circular disk with a raised center platform on which are placed various design motifs. A horizontal bar extends across the concave space created by the raised platform and presumably enables the ornament to be strung and hung. These circular ornaments have been both identified as equestrian bits (泡饰 *paoshi)* and as ornamental buttons (扣 *kou*) (Yangfutou 2005:627). A comparison of these artifacts with known types of equestrian reins and trappings from Qujing and the Lake Dian region however shows that these ornaments lack the distinctive form of latch or hook found on bits. Thus, I tentatively conclude their function to be mainly associated with bodily ornamentation.

Surface design motifs largely divide the buttons into a snake button and a spiral buttom. At Batatai, 12 burials contained buttons, ranging from one single bit to as many as 16 bits. Most burials contain only one type of bit with the exception of burial #M279 (n=16). Snake bits (n=6 in 3 burials) consist of a coiled serpent design encircled by a sawtooth design around the edge of the disk. The raised center platform has curved corners and the bar on the back is slightly bent. The button ranges from 5.30 – 9.20 cm (mean = 5.58 cm) in diameter and weighs 19 – 26 g (mean = 24.0 g). Spiral buttons (n=30 in 5 burials) consist of symmetrically arranged spirals and two protruding corners around the edge of the disk. The raised center platform has either rounded or beveled corners while the bar across the back is straight. These buttons range from 3.50 – 4.60 cm (mean = 4.28 cm) in diameter and weighs 14 – 22 g (mean = 20.3 g).

Three distinctive buttons from Batatai do not belong to these two primary types. They consist of two buttons with a raised pointed platform (Cat. #M21:131, #M119:1) one characterized as a sheet disk button (Cat. #M183:14), and one knob shaped button (Cat. #M140:3) measuring 7.0 cm in diameter.

Bronze bangle

Bronze bangles are classified mainly by three types of surface treatment: inlay bangles, plain bracelet and collared bangles. Inlay bangles consist of a concave band (0.50 - 0.82 cm in height) characterized by a c-shape profile. Rough cut turquoise stones are glued to the concave face. These bangles (Batatai n=16) have a diameter measuring 6.30 – 7.60 cm with a mean of 6.68 cm. Plain bracelets consist of thin round bands (Batatai n=12 Hengdalu n=4) that measure 3.20 – 7.10 cm in diameter with a mean of 5.45 cm. Collared bangles (Batatai n=4) have a wide band that is bisected by a horizontal disk, which produces a t-shape profile. These bangles measure 5.83 – 9.58 cm in diameter with a mean of 7.64 cm. The bangles also have thicker bands measuring 0.83 – 1.25 cm in height and a mean of 1.09 cm. Hengdalu contains a distinctive type of wide band bangle (n=3) that has a checkered design on the exterior surface.

Han Import Types

Belt hook

Belt hooks (带扣 *daikou*) are long "serpent" head hooks with a round button fastener on the back (Figure 6.19). They are classified into a long and short type. Long belt hooks (Batatai n=10 and Pingpo n=3) measure 7.60 -13.80 cm and has a mean of 9.44 cm. Short belt hooks (Batatai n=3 Pingpo n=2) measure 2.90 – 5.60 cm in length and has a mean of 3.86 cm. Some belt hooks have additional surface decoration in the form of eyes on the hook end.

Han seal

One square bronze seal with a tortoise design was found at Batatai (Cat. #M69:5). The seal measures 1.70 cm by 1.70 cm in height. Two possible readings of the inscription are 铺汉王印 "puhan wang yin" (seal of the king Puhan) or 王铺汉印 "wangpu han yin" (personal seal of Wang Hanpu).

Han mirror

Two Han (206 BC - 220 AD) mirrors were found at Batatai (Cat. #M69:4 and Cat. #M16:2) (76). Cat. #M69:4 has a band of dragon/serpentine decoration in low relief encircling the central domed boss (8.70 cm in diameter). The band design relates to

concept of four directions as represented by the division created by the four raised knobs. Cat. #M16:2 is of the 日光 *riguang* type (5.80 cm in diameter) and bears the inscription "见日之光 长无相忘 "(Reflections of light brings forth longevity and eternity).

Han coins

Han coins are divided into three primary types and approximately span the period from the reign of Wudi (140 – 87 BC) to Wang Mang Interregnum (AD 9 – 23). Due to problems of conservation, the coins are fused together such that inspection of individual coins was often not possible. Coins from different mint dates were usually found mixed within the same burial assemblage.

Wushu 五铢 type

Dating methodology for 五铢 *wushu* coins is based primarily on the stylistic trends in the angle or curvature of the *wu*五 script and the shape of the triangle of the *jin* 金 radical.[2] Coins are broadly divided between those of the Wudi reign (104 – 87 BC), which is defined by a more elongated form of the *wu* character, and the Zhaodi – Xuandi reign (86 – 49 BC), which is defined by a more hour-glass shaped *wu*. These diagnostic attributes are based on *wushu* coins excavated from well dated burials of the Central Plains region that have provided key reference materials (Jiang 1997). Batatai has yielded 499 *wushu* coins from 26 burials and Pingpo has yielded 367 coins.

Table 6.12: Distribution of the different Han coins across two of the three sites

	Wushu coins				
	Wudi (104 – 87BC)	Zhaodi-Xuandi (86 – 49 BC)	*Daquan wushi* (9-23 AD)	*Dapu huangqian* (9-23 AD)	Total
Batatai	76 (53.1%)	423 (58.5%)	62 (100%)	5 (100%)	566 (60.7%)
Pingpo	67 (46.9%)	300 (41.5%)	0	0	367 (39.3%)
Total	143	723	62	5	933

Percentages are calculated from the column totals of the two sites.

Only five burials from Batatai (#M10, 13, 33, 63, and 69) yielded *wushu* coins from the Wudi reign. At least one *wushu* coin of this type was examined from each of

[2] For a comprehensive guide to identification of wushu coins, see Jiang Ruoshi 1997.

these burials. Wushu coins from the Wudi reign are characterized elongated *wu* character tending toward triangular shape. These coins measure 2.40 – 2.70 cm in diameter and weigh 3.80 – 4.00 g per coin. There are 67 coins from two burials (#M40 and M55) at Pingpo.

Twenty burials from Batatai contained a total of 423 *wushu* coins from the Zhaodi-Xuandi periods. The abundance of this type of coinage allowed for the examination of multiple examples from each burial. These coins are characterized by a progressive trend toward an hour-glass shaped *wu* character. Many of these coins carry the standard attributes of *xuanping* 宣平 *wushu* type. These coins measure 2.48 – 2.90 cm in diameter and weigh 3.30 – 3.60 g per coin. Nine burials from Pingpo yielded a total of 300 Zhaodi-Xuandi period coins.

Daquan wushi 大泉五十 (Wang Mang Period). This coin was introduced under the Wang Mang reform and its value is equal to 50 *wushu*. It is a round coin and measures 2.70 – 2.90 cm in diameter and weighs around 3.20 – 7.30 g. Eight burials from Batatai have yielded a total of 62 coins.

Dapu huangqian 大布黄千 (Wang Mang Period) is a spade-shaped coin. Three burials from Batatai have yielded five coins. The coins measure about 5.90 cm in length, 2.0 cm in width and weigh approximately 11.0 g.

CATEGORIES OF IRON IMPLEMENTS

Iron implements consist of weaponry (sword, spear, knife, arrowhead), utilitarian implements (ax and chisel), food vessel (cooking pot), and horse trappings. These objects are presumably imports from the Central Plains area given their typological correspondence to samples documented from the Central Plains tombs. Only the sites of Batatai and Pingpo yielded iron implements, while samples from Hengdalu were reported as stray surface finds (see Table 6.13). Because of serious corrosion and inadequate storage conditions, I was not able to handle the iron objects and thus rely on published reports and notes. The discussion will contrast the shape of the iron implements with their bronze counterparts.

Table 6.13: Distribution of iron implement types across two of the three sites

	Sword	Spear	Halberd	Ax	Chisel	Knife	Pot	Total
Batatai	2 (100%)	5 (83.3%)		9 (81.8%)	7 (87.5%)	31 (79.5%)	3 (75%)	57 (80.3%)
Pingpo		1 (16.7%)	1 (100%)	2 (18.2%)	1 (12.5%)	8 (10.5%)	1 (25%)	14 (19.7%)
Total	2	6	1	11	8	39	4	71

Percentages are calculated from the column totals of the two sites.

Iron sword

Iron swords are much longer than their bronze counterparts. Two swords from Batatai consist of long blades measuring 48.50 cm and 80.00 cm in length. The blades have two working edges and a diamond shape cross-section. The hilt and handle have bronze, jade and possibly wood components.

Iron spear

Iron spears have a long socket shaft and approximate the length of the large bronze spears. They measure 21.50 – 35.50 cm in length. The spear tips are all triangular in shape with a diamond shape cross-section. No samples have the leaf shaped tips or the concave socket base found among bronze spear points.

Iron knife

Iron knives consist of a long lamellar blade with one working edge. A ring at the proximal end of the blade allows for the fastening of the knife to the belt. Iron knives appear in two sizes: a long knife averaging 52.80 cm in length and a short knife averaging 29.50 cm in length. Iron knives are generally longer than the bronze knives.

Iron ax and chisel

Iron axes are characterized by two blade shapes: shouldered (n=3) and semi-circular (n=6). The sockets are all square shaped with the exception of a circular socket specimen reported from Pingpo. They measure from 8.00 – 14.5 cm in length and 8.60 – 9.00 cm in width. Chisels (n=7) resemble their bronze counterparts in having a long tapered blade measuring 19.60 - 21.30 cm in length.

Iron food vessels

Iron Pot

The iron pots resemble their bronze counterparts with two loop handles on opposite sides of the shoulder region. The vessels have round bottoms and the one excavated pot from Pingpo was found with an iron stand (Cat. #M192:1).

Other metals

Lead tube and ingots (bullae)

Eight lead bullae and two tubes were found from two burials at the site of Batatai. These objects are made of solid lead. The pellets measure 1.15 cm in diameter and weigh 30 g. The tubes measure 10 cm in length and 0.90 cm in width (109). It is not clear if these objects are ornamental or alloy material.

Gold needle/pin

One solid gold pin from Hengdalu (#M40:11) was noted in the excavation report. It measures 3.40 cm in length and 0.10 cm in thickness.

CATEGORIES OF STONE ORNAMENTS

Stone ornaments consist of both unitary objects (bangles and earrings) and composite types comprised of different beads (tube, round, bead, plug, and button) manufactured from jade, agate, carnelian, turquoise, cobble, and glass. As shown in Table 6.14, the distribution of stone ornaments also corresponds with bronze artifact patterns, showing a preferential distribution to the Batatai site. Jade ear disks and beads are the most abundant stone artifacts in the assemblage. Their occurrence at all three sites also indicate a wider circulation

Table 6.14: Distribution of stone ornaments across the three sites

	Jade				Agate		Turquoise	Total
	Ear Disk	Bangle	Beads	Button	Bead	Plug	Bead	
Batatai	31/61 (70.1%)	7/13 (92.9%)	62/73 (94.6%)	3/17 (100%)	1/28 (100%)	1	1/10	203 (86.4%)
Hengdalu	13 (14.9%)		2 (2.6%)					15 (6.4%)
Pingpo	13 (14.9%)	1 (7.1%)	3 (3.8%)					17 (7.2%)
Total	87	14	78	17	28	NA	10	235

Percentages are calculated from the column totals of the two sites. Fraction values show the number of identified beads / total # beads in report.

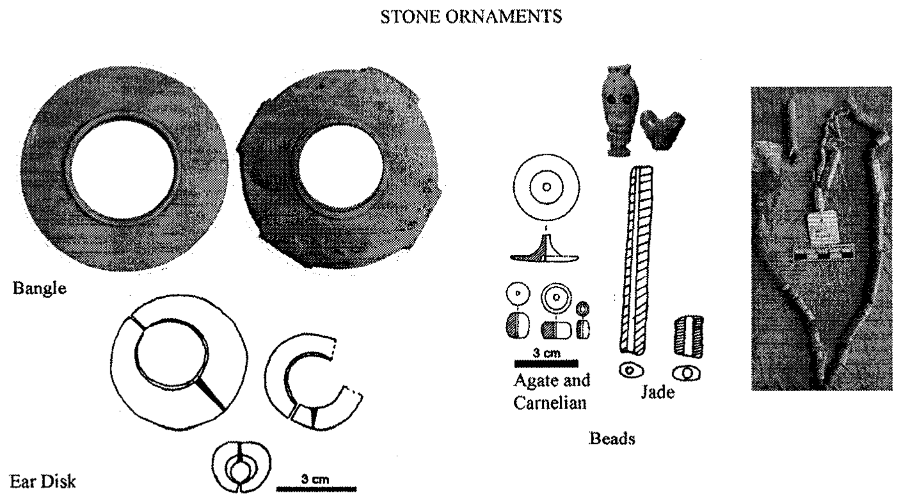


Figure 6.20. The types of stone ornaments identified in the mortuary assemblage.

Jade ear disk

Jade ear disks consist of circular jade plaques with a narrow slit. The disks are thickest in the center and taper toward the edge. Thirty-one ear disks from 17 burials at Batatai were examined. According to excavation reports and grave illustrations, the disks are always placed near the skull. Each burial contained anywhere from one to three ear disks with the exception of burial #M41, which contained nine ear disks in "serial" size order. This presented a unique case whose significance is unclear. Ear disks are classified according to three size groups: small (2.0 – 3.0 cm in diameter), medium (3.50 – 5.60 cm in diameter), and large (greater than 5.60 cm in diameter). Disk thickness for the different size groups range 0.10 – 0.27 cm, with a mean of 0.19 cm. These size categories correspond with the four type classification defined by the excavators at Batatai, with the exception of my merging of the two small size class in their system and also with the types defined for the Pingpo assemblage (Yunnan Provincial Institute of Cultural Relics and Archaeology 2002:114).

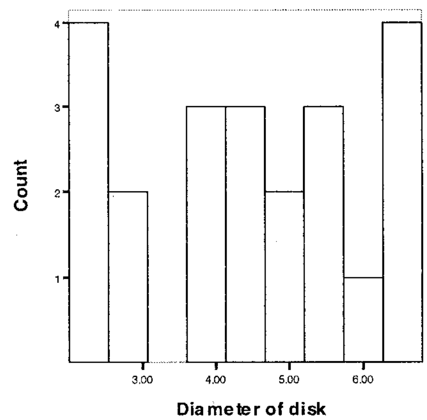


Figure 6.21. The range of widths characterizing the jade ear disk assemblage.

Jade bangle

Jade bangles are divided into a two primary types: collared (n=9) and cylindrical (n=4). There are 13 bangles from six burials at Batatai. Collared bangles consist of a wide circular disk that may also have four beveled corners. This type is noted by a t-shape profile. The bangle has a large diameter measuring 12.36 – 14.72 cm and .86 – 1.20 in height. The circular disk can be as thin as 0.70 cm. Cylindrical bangles are plain, thick bands measuring 9.17 cm in diameter and 2.14 cm in height.

Jade cortex

Three jade cores associated with two burials were found at Batatai (Cat. #M279:11 and #M96:2). These are the "wasters" left over from jade bangle production.

Bead ornaments (neck ornament and sash)

Seventeen burials from Batatai have yielded stone bead artifacts. Most of these burials contain a combination of different bead types suggesting that the beads themselves constitute a composite ornament. According to excavation reports, beads are found on top of the chest and abdomen area, suggesting that they may have been either worn as a neck ornament or sewn onto fabric and worn as a sash. In this study, a burial containing a high quantity and array of bead types is coded as a sash (n=5) while those containing two to three beads of one type is coded as a necklace (n=12).

Jade beads

Jade tubular beads are divided into a long and short type. Sixty-two beads out of a total of 73 were examined from Batatai. Long beads are greater than 4.0 cm in length while short beads measure 1.10 – 3.80 cm in length. Tubular beads measure 0.54 – 1.10 cm in diameter. Thirteen burials from Batatai have yielded a total of 73 jade beads, with most burials having 2-3 beads. In the remaining five burials, the jade beads co-occur with other kinds of stone beads and constitute part of a larger composite ornament. Two unique anthropomorphic beads shown in Figure 6.20 (#M41:8-10 and #M41:8-11) fashioned after anthropomorphic shapes are worth noting. One bead depicts a sculpted head with inlaid eyes and the second depicts the chest of the individual.

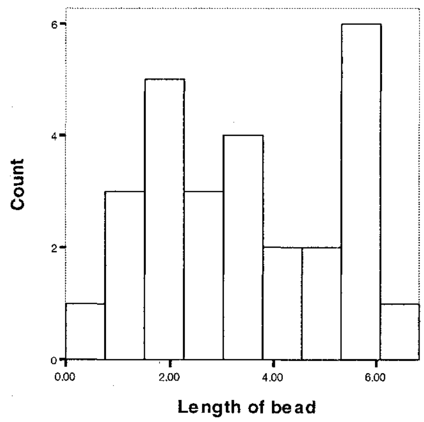


Figure 6.22. Distribution of jade bead lengths.

Agate beads

Agate beads are divided into small and large ball beads, tubular beads, plug-shape beads, and buttons. The agate material is characterized as a hard translucent stone ranging from a white to pinkish color. All of these beads were found primarily in three burials at Batatai (#M32, M41, and M55). Round beads (n=10) measure 0.70 – 1.40 cm in diameter. Tubular beads (n=10) measure 1.90 cm in length. Seven burials from Batatai yielded a total of 17 buttons. Buttons are round with a nipple-shaped top and two drilled holes on the back. They measure 2.00 – 3.50 cm in diameter. One burial (#M35) from the Pingpo site has yielded five agate beads.

Carnelian beads

Carnelian beads also appear in round and tubular shapes of different sizes. The carnelian is an opaque stone ranging from orange to red color. Two burials from Batatai yielded seven beads. Round beads (n=4) range from 0.70 – 1.45 cm in diameter and tubular beads (n=3) range from 1.30 – 1.70 cm in length.

Turquoise beads

Twenty-six small sequin beads and one barrel shaped bead from four burials at Batatai were examined.

Glass beads

Three burials from Batatai have yielded glass beads. Glass round beads range in color from green to blue. Based on their shape and manufacturing technique, they resemble samples manufactured in Southeast Asia or South Asia (J. Lankton personal communication 2007). Burial #M6 contains a strand comprised of 86 beads.

Other ornaments

Groundstone pendant

All three sites (Batatai n=4, Hengdalu n=6, and Pingpo n=7) have yielded groundstone pendants, which consist of a cobble fashioned into a long pendant with a drilled hole at the top. Because there is use-wear on some of these pendants, local archaeologists have also classified them as whetstones. They vary 7.0 – 17.10 cm in length and 1.30 – 3.20 cm in width.

Wood bangle

The site of Hengdalu has yielded 15 wood bangles from 11 burials while Pingpo has 32 bangles. I was not able to examine these bangles since the specimens have deteriorated due to the lack of adequate conservation. According to site reports, the bangles from both sites divide into two decorative types: a painted motif (n=33) and inlaid shell (n=7).

SUMMARY

Table 6.15a and b present a list of the basic or <u>primary minimal types</u> and their subtypes outlined in this chapter.

Table 6.15a: Summary of primary types and subtypes

	Type	Size Types	Shape Types
Ceramics		Small	
	Tripod	Medium	Round base
		Large	Flat base
		Small	
	Flared mouth jar	Medium	
		Large	
	Jar		Globular
			Straight
	Lidded jar		
	Globular jar		
	Shouldered jar		
	High neck jar		
	Pedestal plate		
	Pedestal jar		
	Plate		
Bronze Weaponry	Halberd	Long	
		Short	Crown hilt
			Square hilt
	Blade	Raised groove	
		Nub	
		No-nub	
	Sword	Long	
		Short flaring	
	Spear	Long	
		Medium	Leaf shape
			Triangular shape
		Short	Concave base
			Flat base
	Knife	Hollow handle	
		Solid handle	
	Arrowpoint		
	Sheath		
	Quiver		
	Armor		
	Chisel/Ax		
	Pick		
Bronze Serving Ware	Cauldron		
	Pot		
	Cup		
	Bowl		
	Vase		
	Basin		

Table 6.15b: Summary of primary types and subtypes

Bronze Ornament	Buckle	Animal face
		Inlay
		Rectangular plaque
	Button	
	Belt hook	
	Equestrian	
	Seal	
	Mirror	
	Coins	Wushu
		Da quan wushi
		Dapu huang qian
Iron Implement	Sword	
	Spear	
	Halberd	
	Ax/Chisel	
	Knife	
	Pot	
	Lead tubes/ingots	
	Gold Needle	
Stone Ornament	Jade ear disk	Small
		Medium
		Large
	Jade bangle	Collared
		Cylindrical
	Jade cortex	
	Neck Ornament	
	Sash	
	Whetstone	

Chapters 7 and 8 will evaluate the configuration/co-variation of these minimal types at the sites of Batatai and Hengdalu to determine distinct offering types, thus aggregating the primary minimal types to determine the basic categories of mortuary treatment. Sub-variants will also be evaluated at the spatial and temporal scale to determine potential social and chronological sources of the variability. Unfortunately, analysis at this level of specificity is not possible for the site of Pingpo. In the concluding chapter, I incorporate the preliminary patterns observed from this chapter to discuss broader regional contrasts.

Chapter 7
Batatai Site

This chapter traces the lengthy developments in mortuary ritual from 800 BC – 26 AD for the community located at Batatai. As mentioned in chapter 5, Batatai is the only Bronze Age multi-mound complex within the Qujing region. This dissertation focuses specifically on burial excavations from mound 2 (see Figure 7.1). The goal of this chapter is to provide a reconstruction of the mortuary ritual for each chronological period to document community level organization as well as social identities at the individual level. From there can we assess diachronic patterns to eventually address the process of culture change itself. I first discuss the basis for determining temporal and cultural phases at Batatai through an analysis of multiple lines of data. I then examine the sources of mortuary variability for each synchronic phase to reconstruct the social principles structuring the mortuary ritual. Finally, I evaluate the continuity and divergence of those social principles across the different periods to determine the nature of cultural change.

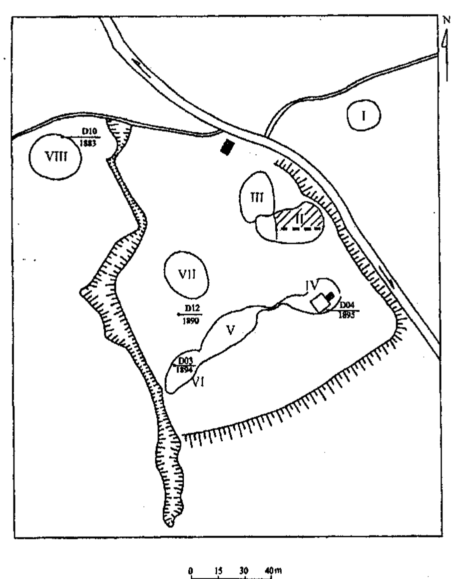


Figure 7.1. Batatai cemetery mound group. The hatched area shows the excavated section of mound 2.

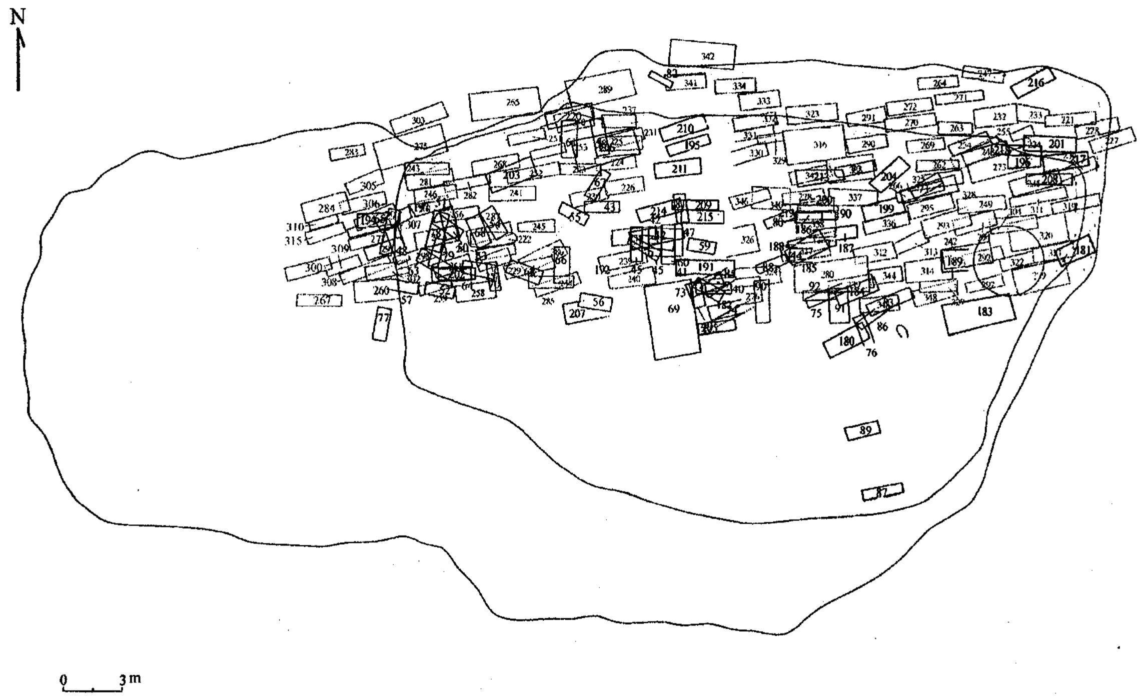


Figure 7.2. Excavated burials from mound 2, seasons 3, 5, and 6.

CHRONOLOGICAL ORDERING OF PHASES

The determination of chronological phases in complex mortuary assemblages is based on correspondence between associated construction sequence, absolute dates, occurrence of diagnostic artifact types, and grave orientation. It is expected that chronological phases will be differentiated by "breaks" in the internal distribution of artifact types and grave treatments. If these lines of evidence produce corresponding "breaks" that converge with the construction sequences, then the identification of distinct temporal units is strengthened.

Description of soil texture and color of each construction level

Comprehensive excavation notes on stratigraphy are not available for the Batatai site and reporting was inconsistent on the depth below datum for the majority of burials. In light of these problems, cross-referencing between a burial's associated construction level and season of excavation provided an alternate means for determining stratigraphic order. Seven construction episodes were identified at the Batatai mound, which the excavators identified as distinct stratigraphic levels (Figure 7.3). These units are referred to as <u>excavator levels</u>. Mound 2 reached a height of approximately 9.0 m. These

excavator levels are accepted as the discrete units of temporal activity. I outline below the physical description of the deposit and its estimated chronological duration.

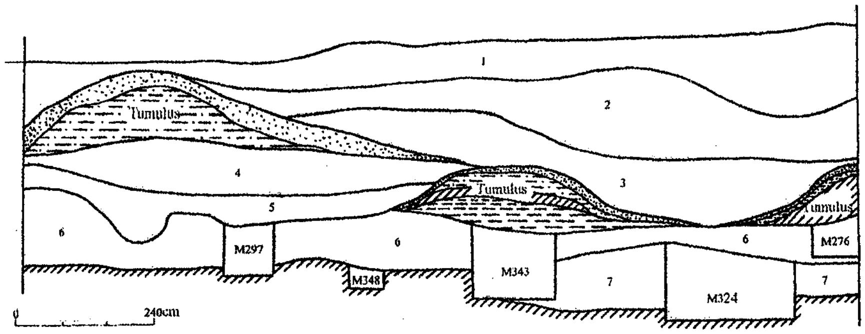


Figure 7.3. Profile from southeast wall of mound 2.

Level 6 and 7 represent the earliest construction episode as the two levels were deposited on sterile sediment. Of the entire assemblage, stratigraphic data for burial deposits is only available for these two levels. Level 6 ranges from 30 – 140 cm in thickness and the sediment is described as mottled reddish brown in color. Level 7 measures 60 – 115 cm in thickness and the sediment is described as mottled tan brown in color. Burials from these two levels directly cut into the sterile deposit below. Burial #M279 (UW 1448), which is located at 5.40 m below datum, yielded a thermoluminescence (TL) date of 2986±204 BP, 980±204 BC. These two strata were excavated during season 6 of fieldwork.

Levels 5 and 4 were excavated over the course of seasons 5 - 6. The two levels appear to be stratified beneath or capped by the same episode of tumuli burial construction. Level 5 measures approximately 90 cm in thickness and the deposit consists of a light gray soil. Burial #241 (UW1452), which is located at 5.0 m below datum, yielded a TL date of 2877±298 B.P., 871±298 BC Level 4 measures approximately 100 cm in thickness and the deposit consists of a brownish black soil.

The excavation report did not mention which seasons of fieldwork were associated with the discovery of levels 3 through 1. However, the excavators did uncover the deposits according to natural stratigraphic levels. Level 3 measures 125 cm in thickness and the deposit consists of a mottled tannish grey sediment. Burial #M119 (UW 1451), which is located at 3.0 m below datum, yielded a TL date of 2812±300 B.P., 806±300 BC.

Burials from level 1 and 2 were likely excavated over the course of seasons 1 – 3 of fieldwork (see table). Level 2 measures 165 cm in thickness and the deposit consists of a reddish brown sediment. Level 1 measures 20 – 160 cm in thickness and the deposit consists of a mottled reddish brown soil. Burials excavated from seasons 1 – 3 deposits yielded Han coins and imported metal objects dating from the Han Wudi's reign (109 BC) to the Wang Mang period (AD 26). A radiocarbon date (cal. 120 BC – AD 80) from the same stratigraphic deposit also corroborates with the coin dates. It is not clear if these datable burials belong only to level 1 or crosscut both levels.

Table 7.1: The stratigraphic sequence and absolute dates from associated contexts.[1]

Excavator level	Radiocarbon dates	TL dates	Season of excavation
Level 1 N=70 Level 2	Cal. 120 BC – AD 80; 66.9% (2004±80 B.P., ZK-3106)		Season 1 - 2
Levels 3 N=129		2812±300 B.P., 806±300 BC (UW 1451)	Season 3 - 4?
Levels 4 and 5 N=74		2877±298 B.P., 871±298 BC (UW 1452)	Season 5 - 6
Level 6 and 7 N=75		2986±204 BP, 980±204 BC (UW 1451)	Season 6

Based on this order, three distinctive chronological phases are tentatively bracketed. In addition, through the analysis of grave orientation and artifact type distributions (presented below), I was able to identify two additional phases which could not be discerned from the stratigraphic information alone.

Chronological phase 1 consists of burials deposited in excavator levels 6 and 7 and located above sterile soil. These graves thus originate from the earliest episode of mound construction. Chronological phase 2 includes of burials placed above level 6 and deposited in levels 4 and 5 (see fig. 7.3). As mentioned, burials in both levels are

[1] Season VI (n=127) consist of burials #M221-348. Season V (n=40) consist of burials #M180-220. Season IV (n=83) consist of burials #M94-179. Season III (n=53) consist of burials #M40-93. Season II consist of burials #M22-39. Season I (n=21) consist of burials #M1-21.

stratified below a single episode of tumulus construction and above the basal deposits of levels 6 and 7. The terminal or post-Han conquest period (chronological phase 5) consists of burials with datable Han objects that are presumably stratified either in level 1 or 2.

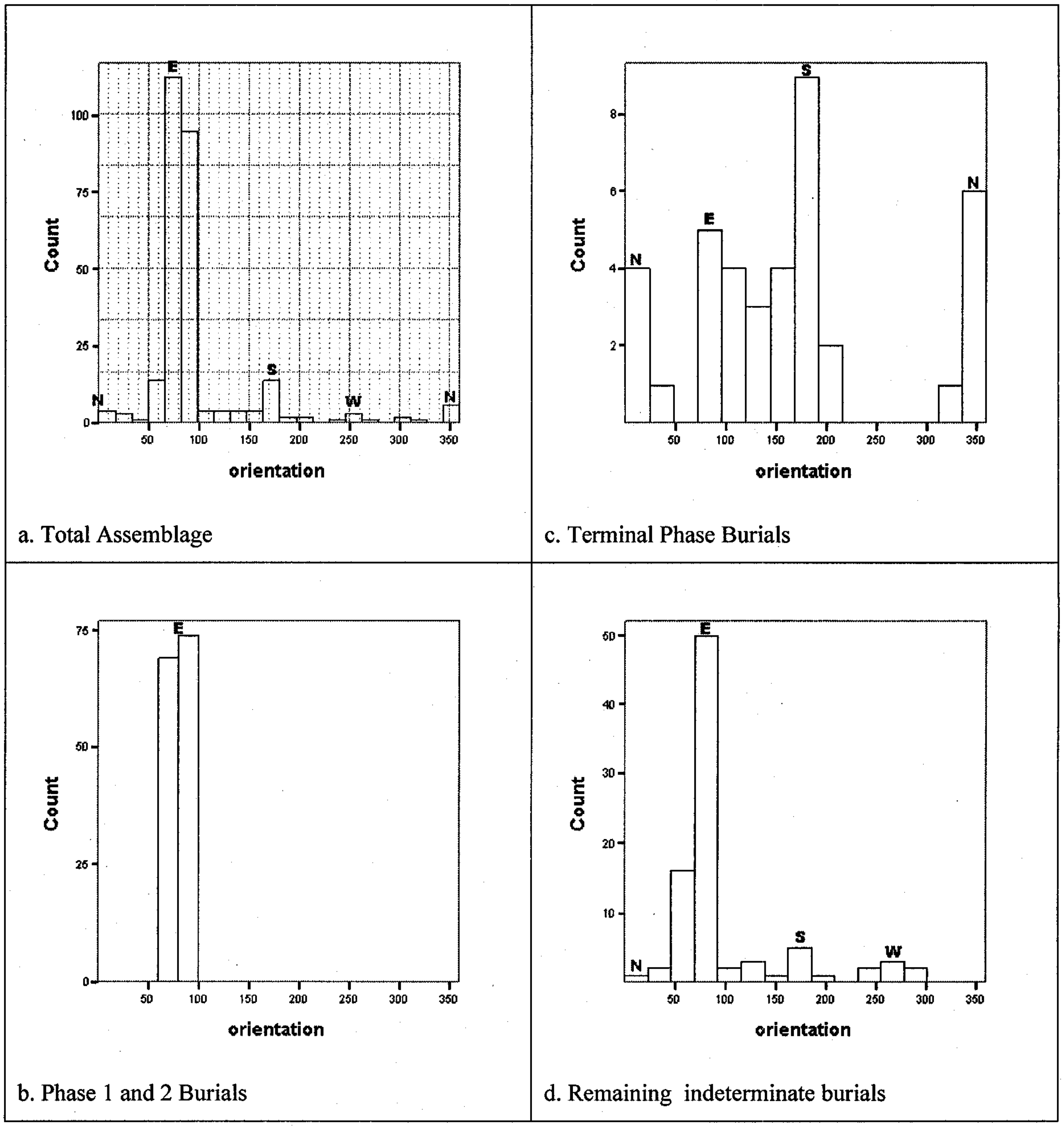
As noted, these three stratigraphic levels are relatively straightforward to identify and distinguish. The remaining burials belonging to levels 2 and 3 (N=129) are more difficult to place into distinct phases because of the absence of stratigraphic information for the individual burials. In the analysis that follows, I evaluate grave orientation and artifact type distributions to further delineate and verify these cultural phases. As will be shown, the burials from levels 2 and 3 represent two distinct phases, designated here as phases 2 and 3, intermediate between the phase 1 and phase 4.

Grave Orientation

Grave orientation represents an aspect of the body treatment that is both intentional and meaningful to the mortuary symbolism. As a significant component constituting the physical structure of the tomb, grave orientation represents a primary stage in the construction and realization of a proper mortuary space. Because grave orientation provides one of the most visibly compelling ways to mark identity that is available to every individual, there is an increasing potential for grave orientation to express a dimension of social identity that is sanctioned by collective prescriptions. By extension, grave orientation should therefore present a dimension in the mortuary ritual most likely to be regularly structured. It is expected that within a given temporal period, contemporaneous burials should demonstrate consistent variation in grave orientation. Changing pattern in grave orientation between different construction levels provide an alternative measure for the identification of "breaks" in the burial assemblage.

The histogram for the Batatai assemblage (Figure 7.4a; n=277, 71 missing) shows four distinct modal group in grave orientation: *North* (350 – 45 degrees), *South* (150 – 220 degrees), *East* (50 – 140 degrees), and *West* (230 – 310 degrees). The majority of burials are oriented toward the east (n=231). Graves from the basal deposits of phase 1 and phase 2 overwhelmingly exhibit an east orientation (Figure 7.4b; n=143). Graves deposited in the upper most strata and containing Han import items (Figure 7.4c; n=43)

show a strong tendency toward a north (n=12) and south orientation (n=17), contributing to the presence of these two modal groups in the assemblage.



a. Total Assemblage
c. Terminal Phase Burials
b. Phase 1 and 2 Burials
d. Remaining indeterminate burials

Figure 7.4a-d. Distribution of grave orientations.

The remaining burials (Figure 7.4d; n=90, N=105) stratified between level 4 and the terminal post-Han graves show multimodal orientations. Eighty-two burials (91.1%) are oriented toward the east, which is consistent with the trend characterizing levels 4 – 7 burials. The exceptions are the seven burials that are oriented toward the west and one

unique burial pointed toward the south. Examination of these burials' in the excavation order suggests that they were uncovered early on during season 4 of excavations. Burials uncovered during season 4 were numbered in the order of discovery from #94 – 179. The "west" and "south" oriented graves were assigned burial numbers in the range of #94 - 145, suggesting that they were likely located closer to the top of the excavation surface, while burials numbering #145 and higher were more deeply stratified.

Distribution of grave goods across the periods

To further refine the periodization of this intermediate group of burials, I rely on morphological divisions within individual artifact types and artifact distributions to detect "breaks" within this group. These two dimensions of material variability represent two separate measures for the evaluation of temporal shifts. The logical basis of using morphological attributes to identify "breaks" in the assemblage is based on the argument that if all functional purposes remain equivalent, a shift in the stylistic attribute of an artifact type within the stratigraphic order must represent a temporal variability. The use of artifact distributions to examine temporal variation presents a different analytical problem. In particular, new artifact types provide the evidential basis for inferring cultural change. In adapting the same data to determine chronology, one risks the conflation of analysis and interpretation. While this problem presents tautological conflicts, it is in many ways unavoidable because culture change is behaviorally interdependent on time or the historical emergence of Han imperialism. This analysis however tries to redress this problem by corroborating artifact introductions with parallel changes in morphological types to further strengthen the argument for temporal significance.

An examination of the ceramic distributions shows that tripod forms show a sudden morphological shift from a round base to a flat base (n=7 of 10) vessel among the 'upper' level burials, a trend that persists into the terminal phase. Among bronze implements, morphological transitions also emerge across multiple artifact types in the upper level burials. Blades and halberds shift abruptly from having a center spine or ridge to a flat body form among the 'upper' level burials, a trend that continues into the terminal phase. Similarly, bronze axes develop from having round to a semicircular socket.

Table 7.2a: Frequency of ceramic types by stratigraphic order.

	Phase 1	Phase 2	#146-200 'lower'	#94-145 'upper'	Phase 5	Total
Tripod*	3 (9.375%)	10 (31.25%)	**6 (18.75%)**	**10 (31.25%)**	3 (9.375%)	32
Jar	2 (6.25%)	9 (28.125%)	9 (28.125%)	8 (25%)	4 (12.5%)	32
Large flared mouth	4 (13.79%)	8 (27.59%)	9 (31.03%)	4 (13.79%)	4 (13.79%)	29
Medium flared jar	1 (11.1%)	3 (33.3%)	2 (2.22%)	2 (2.22%)	1 (11.1%)	9
Tall neck jar*	0	0	**0**	**1 (25%)**	3 (75%)	4
Globular jar	1 (25%)	1 (25%)	2 (50%)	0	0	4
Shouldered jar*	0	0	**0**	**1 (25%)**	3 (75%)	4
Cup	0	2 (40%)	2 (40%)	0	1 (20%)	5
Basin	0	0	0	0	3 (100%)	3
Pedestal plate	0	0	4 (36.4%)	2 (18.2%)	5 (45.4%)	11
Plate	2 (6.9%)	9 (31%)	10 (34.5%)	6 (20.7%)	2 (6.9%)	29

Percentages are out of total counts in the entire assemblage. Asterix indicates types with variable distributions across the excavator levels.

An examination of new ceramic types shows the introduction of the tall neck jar and shouldered jar in the assemblage beginning in the 'upper' level assemblage. The distribution of bronze weaponry types also shows artifact replacement that lend support to the possible division of this intermediate group of graves into an 'upper' and 'lower' period. Chisels and spears appear for the first time in the grave assemblage among the 'upper' level burials.

Table 7.2b: Frequency of bronze weaponry by stratigraphic order.

	Phase 1	Phase 2	#146-200 'lower'	#94-145 'upper'	Terminal Phase	Total
Sword	4 (13.3%)	8 (26.7%)	6 (20%)	6 (30%)	6 (30%)	30
Blade*	4 (15.4%)	10 (38.5%)	6 (23.1%)	5 (19.2%)	1 (3.8%)	26
Halberd*	7 (15.6%)	19 (42.2%)	6 (13.3%)	5 (11.1%)	8 (17.8%)	45
Spear*	0	0	0	7 (29.1%)	16 (6.7%)	23
Ax*	1 (12.5%)	2 (25%)	0	3 (37.5%)	2 (25%)	8
Chisel*	0	0	0	2 (50%)	2 (50%)	4
Pick	0	0	1 (50%)	0	1 (50%)	2
Knife	0	5 (17.85%)	7 (25%)	11 (39.3%)	5 (17.85%)	28

Percentages are out of total counts in the entire assemblage. Asterix indicates types with variable distributions across the excavator levels.

Given that the location of these 'upper' level graves are stratified between antecedent periods of consistent mortuary program and the subsequent Han conquest

phase, I argue that the convergent shifts observed for grave orientation and artifact types likely represent a discrete phase.

Summary of Chronological Phases

Incorporating both stratigraphic evidence and evidence for changing mortuary practices, the working chronology proposed for Batatai consists of five cultural phases. To determine the absolute dates for these phases is more difficult given the lack of agreement between radiocarbon and TL dates (see chapter 5). Specifically, while the TL dates show internal consistency between the dates and stratigraphic order (see Table 7.1), they tend to be 150 – 200 years older than the radiocarbon dates. Given the increased likelihood of errors associated with TL dating on curated samples, I rely on basal radiocarbon dates from Hendalu and Pingpo, which are consistent with each other, and a date from the terminal stratum at Batatai (see chapter 5). These dates together suggest the initial construction of the Batatai site began around 900 BC and remained in use until as late as AD 80, a rough temporal span of a millennium. The probability range for the both the basal and terminal stratum dates vary between 140 – 200 years (see Figure 7.3). Assuming mound construction or renewal and grave deposition follow consistent periodic cycles, each of the five phases should therefore span approximately 200 years to account for the one thousand year record at Batatai.[2] Table 7.3 below summarizes chronological span for the main cultural phases at Batatai.

Table 7.3: Chronological dates of individual cultural phases. Eight missing graves.

Chronological phase	**Estimated dates**	**Central Plains dynastic dates**		**Total # of individuals**
Phase 1	900 – 705 BC	Spring and Autumn (Eastern		67
Phase 2	705 – 510 BC	Zhou)		73
Phase 3	510 – 315 BC	Warring States		51
Phase 4	315 – 120 BC	W.S. - Qin Empire – Western Han	Pre-conquest	74
Phase 5	120 BC– AD 80	Western – Eastern Han	Post-Han Conquest	75

Phase 1 – 3 are periods prior to any documented contact with the Central Plains states. Phase 4 anticipates the period of Han conquest and likely represented a period of

[2] In the absence of greater radiometric dating on the stratigraphic deposits, this wide chronological span remains a problematic assumption. The chronological scheme presents a tentative but conservative estimate.

growing intercultural engagement with the Central Plains states as indicated in the Han texts. Finally, Phase 5 represents the post-conquest period.

SOCIAL ANALYSIS AT THE SYNCHRONIC SCALE

Having developed a preliminary five phase chronology for the Batatai cemetery, in this section I attempt to reconstruct the organizing principles underlying the mortuary ritual for each temporal phase. This analysis is multi-staged and begins with an evaluation of the grave good distributions for each artifact category and the configuration of material offerings that may present patterns of differentiation. Grave treatments (construction, grave length and grave size) are then examined to detect variation attributed to physical height/age versus different levels of energy expenditure. Once the variability within these two lines of funerary treatment is assessed, the analysis examines associations between patterned material treatments and variables of energy investment (grave construction and size) for implications of social differentiation. The identification of synchronic patterns will then allow for a comparison at the diachronic scale to evaluate the trajectory of development within the Batatai community.

Phase 1 (900 - 705 BC)

The initial phase or 'founder' period of cemetery use indicated a limited array of mortuary goods in the funerary treatment. The majority of the burials (n=55/75 or 74.3%) do not have any mortuary offerings. Grave offerings consist of three distinct functional categories: ceramics, bronze weaponry and ornaments. Only fifteen object types are represented and a majority of these objects occur in less than 5% of the tombs. Objects with the highest frequency are the bronze halberd (9.3%) and the jade ear disk (6.8%). Objects with unique occurrences are the bronze ax, sheath, quiver and animal buckle.

Material offerings

Ceramics

Contrary to expectations, ceramics are not the most commonly occurring class of objects in the funerary ritual. The four ceramic types all show a low rate of occurrence and are found in fewer than 5.3% of the burials in phase 1. As discussed in the section on ceramic classification in chapter 6, these vessel types are likely utilitarian wares related to food preparation and serving. All vessels are of the same size class in phase 1 with the

exception of one oversized tripod. In general, the ceramic types occur in burials as single offerings (5.3%), with the exception of two graves (2.7%; M279 and M 280) where the vessel types are placed as a set. As shown in Table 7.4b, ceramic offerings divide into two types distinguished by the quantity of functional types represented.

Table 7.4a: Distribution of ceramic types in phase 1

	Tripod	Jar	Large flared mouth jar	Plate
Count	3	2	4	1
Percentage	4.0%	2.7%	5.3%	1.3%

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

Table 7.4b: Distribution of ceramic configurations in phase 1.

	One-Vessel	Three-vessel Tripod + flared jar +jar + plate
Tripod	1(1.3%)	
Plate	1(1.3%)	
Large flared jar	2(2.7%)	
	4 (5.3%)	2 (2.7%)

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

Given that ceramics are presumably locally made and readily available, their low rate of occurrence in the assemblage is striking. Their absence suggests that ceramic offerings may potentially represent a symbolic dimension of the mortuary ritual rather than an extension of their utilitarian purposes in life. The distinctive role of ceramics is also potentially suggested by the rare occurrence of three-vessel type offerings and the association of a uniquely oversized tripod in one of the three vessels set offerings. The different proportions of cooked offerings represent the most anomalous observation within the ceramic assemblage from phase 1.

Bronze weaponry

While bronze weaponry occurs in higher frequency than ceramics in phase 1, the rate of occurrence for most types is still very low. Eleven (14.6%) of the total graves have one type of implement. The implements divide into five functional groups previously summarized in chapter 6: hafted implements (halberd and ax), swords and blades, ornate containers (quiver and sword sheath) and armor. As indicated in Table 7.5,

halberds are the most frequently occurring implement being present in 9.3% of the burials. Swords and blades are distinguished by the presence/absence of a hilt; they are evenly divided. The sword sheath, quiver, ax and armor are unique occurrences. As discussed in chapter 6, the sword sheath and quiver are some of the heaviest bronze implements in the entire assemblage and in addition, contain very elaborate designs indicating a greater degree of labor investment. The differential occurrence rate and levels of labor investment associated with these different functional types suggest that certain weaponry objects may serve as qualitative markers.

The more commonly occurring implements aggregate into sets, as evidenced by patterns of co-occurrence. Within the grave assemblage, only three burials (4.0%) have a single weapon offering while five individuals (5.8%) have paired weaponry sets comprised of a halberd and a blade (n=2) or sword (n=3). Because blades and swords never co-occur in the same grave and appear to be evenly divided, it is possible that the two implements are considered to be functional equivalents. The removal of the hilt from the blade could have resulted from a variety of reasons, ranging from recycling to heirlooming practices.

Table 7.5: Distribution of weaponry types in phase 1.

	Halberd	Blade	Sword	Total
Halberd	2 (2.7%)	2 (2.7%)	3 (4.0%)	7 (9.3%)
Blade	2 (2.7%)	2 (2.7%)	0	4 (5.3%)
Sword	3 (4.0%)	0	1 (1.3%)	4 (5.3%)
Total	7 (9.3%)	4 (5.3%)	4 (5.3%)	15

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

Taking into account the quantitative and qualitative nature of weaponry distributions, weaponry types are classified according to the following categories:

1. One weapon: Halberd (2), Sword (1) = 3 (4%)
2. Paired weapon: Halberd + Sword (3) or Blade (2) = 5 (6.8%)
3. Other: Sheath, Quiver, Armor

Ornaments

Ornaments are the most commonly occurring class of offerings in phase 1, with 14 (18.6%) of the graves containing at least one type of ornament. Ornaments are of two distinct types of raw materials: bronze and jade, which is each associated with decorating respective parts of body (waist, abdomen and neck and ear, respectively). These anatomical associations are derived from excavator's reports on the position of these artifacts in the grave and also from iconographic portrayals rendered on bronze cowrie shell containers from the Lake Dian region (see Chiou-Peng 2004 for discussion). Jade ear disks are the most commonly occurring ornament type in the assemblage, being present in eight (10.6%) of the graves. In contrast, waist ornaments (bronze button and buckle) are very rare, being present in fewer than three graves. The neck ornament consists of a jade tubular bead, which is only present in two graves.

The jade cortex is a unique occurrence in phase 1. It is grouped under ornaments purely based on its physical property and because of its association with the manufacturing of jade ornaments.

In general, ornaments are classified according to their decorative functions. The co-occurrence of the bronze buckle and button suggested that these two artifacts might function as one unitary ornament; they are classified as waist ornament. Jade ear disks and neck ornaments appeared to be unitary offerings, rarely co-occurring with other ornament types; they thus remain individual types.

Table 7.6: Distribution of ornament types in phase 1.

	Buckle	Button	Jade ear disk	Neck orn	Total
Buckle	0	1 (1.3%)	0	0	1 (1.3%)
Button	1 (1.3%)	3 (4.0%)	0	0	4 (5.3%)
Jade ear disk	0	0	7 (9.3%)	1 (1.3%)	8 (10.7%)
Neck orn	0	0		1 (1.3%)	2 (2.7%)
Total	1 (1.3%)	4 (5.3%)	8 (10.7%)	2 (2.7%)	15

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

Ornament Categories:

1. Waist ornament: Buckle (1) / Button (4) = 5 (5.5%)

2. Ear ornament: Jade ear disk (8) = 10.6%
3. Neck Ornament: (2) = 2.5%

Summary of categories of offering types

Based on the patterns observed from the above analyses, table 7.7 summarizes the range of offering types within each "functional" category. There are eight distinct material treatments responsible for the variation in grave offerings. While the occurrence rates are very low across the categories, the differential rate of occurrence within each category suggests the potential for some types to represent qualitative distinctions. The following section will explore how offering types co-vary in order to discern patterns of differentiation.

Table 7.7: The functional types of grave offerings in phase 1.

Ceramics		Weaponry		Ornaments	
1-vessel	4 (5.3%)	1-weapon	3 (4.0%)	Waist	4 (5.3%)
3-vessels	2 (2.7%)	Paired	5 (6.6%)	Ear	8 (10.6%)
		Container	1 (1.3%)	Neck	2 (2.7%)
	6 (8.0%)		9 (12.0%)		14 (16.0%)

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

Configuration of grave assemblages

The most common grave assemblage contains no offerings (74.3%). Thus, the normative treatment is simply direct interment. Of the remaining 19 graves with at least one grave offering, three primary assemblage configurations characterize the variation in phase 1. The variation is organized along lines of increasing complexity in the quantity of functional categories represented. Thus, burials with one category of offerings contain a unique occurrence of either a ceramic vessel, or bronze weaponry, or ornament type.

The decision to explore variation by diversity of functional categories is because the qualitative nature of offering types appears to the most revealing about the underlying mortuary structure. The general expectation is that increasing levels of mortuary elaboration should be inversely proportional to its occurrence. While graves containing one category of offerings are proportionally much higher (18.7%) than two (4.0%) or three categories (2.7%), the rate of occurrence between two and three categories is roughly proportional.

Table 7.8: The configuration of grave assemblages in phase 1.

1-Category		2-Categories		3-Categories	
Ceramic	2 (2.7%)	Ceramic + Weapon	2 (2.7%)	Ceramic + Weapon + Ornament	2 (2.7%)
Weaponry	4 (5.3%)	Ornament + Weapon	1 (1.3%)		
Ornament	8 (10.6%)				
Totals	14 (18.7%)		3 (4.0%)		2 (2.7%)

Cell values represent the number of graves containing offering type and percent of total burials with offering type.

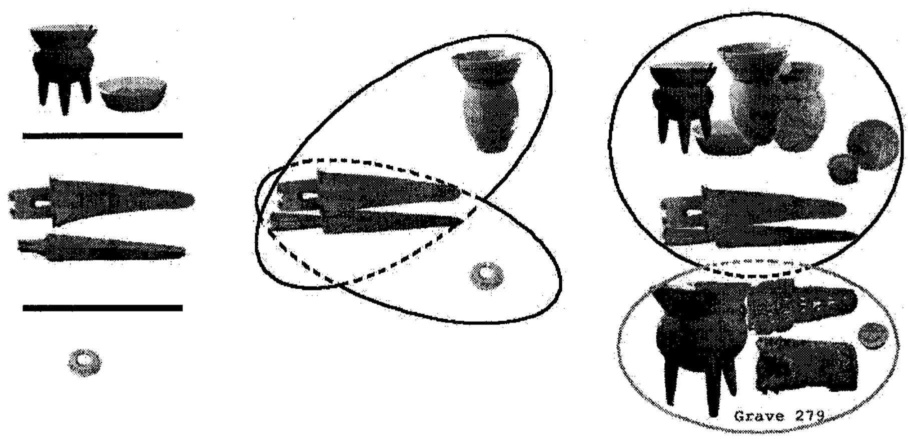


Figure 7.5. Increasing elaboration in the configuration of assemblage types ranging from 1-category to 3-category type assemblages.

Within the 1-category assemblages, graves containing ceramic offerings only contain a 1-vessel type offering. Among graves with weaponry offerings, both single and paired outfits are present. Among ornament assemblages, jade ear disks comprise the majority of the grave offerings with the exception of one bronze waist button. In the two-category group, the two individual assemblages are configured by the combination of an ornament (jade ear disk) or ceramic (one-vessel) prevalent in the 1-category assemblages (Figure 7.5). In effect, the two-category assemblage is configured in an *additive* fashion wherein types typically distributed in the 1-category assemblage are combined.

It is within the three categories assemblages where the less common types appear, suggesting formal differences in the nature of the material treatment. The two individuals (Graves M279 and 280) with this type of assemblage contain a paired weaponry set. Both individuals also have a bronze waist ornament suggesting a correlation of waist

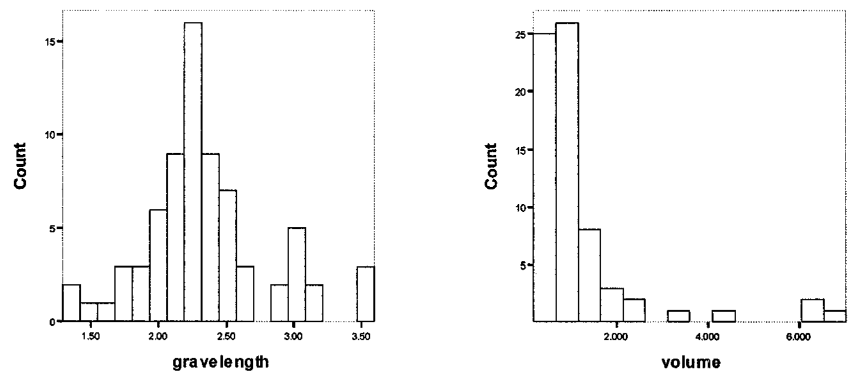
ornaments with more elaborate burials. The two individuals have the 3-vessels type ceramic assemblage. Grave M279, however, is distinguished by uniquely occurring ceramic vessels (oversize tripod), weaponry containers (bronze sheath and quiver), and ornament (jade cortex). In summary, the three categories assemblages are for the most part constituted with offering types also found in less complex assemblage configurations. Furthermore, the exceptional nature of grave 279's assemblage formally distinguishes this individual by drawing on distinct markers from all three functional classes of objects.

Grave treatments

As discussed in the methods section of chapter 4, body treatment in the funerary program is central to the analysis of mortuary differentiation. Aspects of body treatment such as orientation and posture can serve as markers of *horizontal* distinctions while grave construction such as elaborate architecture can indicate differences in labor investment that mark *vertical* distinctions. In the absence of biological data, the physical nature of the graves plays an even greater role in that grave length provides an alternate means for assessing possible age distributions.

Grave length

The distribution of grave lengths shows two modal size groups. Seventy-two burials fall in the main size group ranging from 1.30 m – 3.20 m in length, with the most common grave length measuring 2.20 m. The left skew in the main size group suggests the possibility of additional "breaks" generated by short grave lengths. Three burials with grave lengths exceeding 3.50 m form an outlier group. In a complete population, one would expect a more balanced representation of individual of different age groups thus contributing to distinct grave sizes categories. However, one possibility for the ambiguous patterning may relate to the nature of the funerary rite itself where proscriptive rules restrict popular access to the cemetery mound. Thus, social guidelines limiting membership likely produce the skewed distribution observed here.



Mean 2.33 Median 2.26 Mode 2.20

Figure 7.6a and b. The distribution of grave lengths and grave sizes in phase 1.

Grave size and architecture

Grave size and architecture are proxy measures for determining relative energy expenditure. Grave architecture is represented by two different treatments: an earthen pit grave versus a tumulus structure. If there are distinct differences in labor investment, then one would expect a direct correspondence between these two variables such that a larger grave size is associated with a tumulus structure. As shown in Table 7.9, the distribution of grave volumes shows three distinct modes: graves under 3.00 m^3, a medium size group (3.00 – 4.00 m^3), and three outliers with the largest graves (> 6.0 m^3).

Contrary to expectations, the largest grave size did not entirely correspond with tumulus type burials. One large grave was interred in an earthen pit. Rather, as shown in Table 7.9, five small pit graves were also accorded the tumulus structure. In addition, while one would expect these five small burials to have grave lengths approximating the modal measurement of 2.20 m, two of these graves are the shortest graves in the assemblage, representing the extreme low values in the distribution.

Table 7.9: Comparison of tomb types and tomb sizes in phase 1.

Tomb Size	Tomb Type		Total
	Pit	Tumulus	
Small	62 (82.7%)	5 (6.7%)	69 (92%)
Medium	2 (2.7%)	1 (1.3%)	3 (4.0%)
Large	1 (1.3%)	2 (2.7%)	3 (4.0%)
Total	67 (89.3%)	8 (10.7%)	75

In summary, grave length and grave size reflect the same dimension. But architectural elaboration crosscuts both the biggest and smallest graves. However, the probability of large graves having a tumulus structure is greater (66% vs. 6.7% for small graves). This lack of correlation between the three variables suggests that different dimensions of the funerary ritual are potentially contributing – either mutually or independently - to contrastive energy inputs. In the following discussion, the three variables are analyzed against material treatments to further distinguish the source of the variability.

Patterns of differentiation by grave size and material treatment

The elaboration of material treatment appears to correspond with tomb size. The majority of small graves (91.3%) do not have any offerings, while larger graves tend to have the more elaborate offerings comprised of two and three functional types. Among the 13 small graves with single inclusions, offering types consist primarily of the jade ear disk. The longest and largest grave (> 3.60 m) with a three type assemblage possesses the unique types within each artifact category. These items consist of the oversized tripod and the bronze weaponry containers.

Table 7.10: Comparison of assemblage types and tomb sizes in phase 1.

Tomb Size	Offering categories				Total
	Empty	One Type	Two Type	Three Type	
Small	53 (70.7%)	13 (17.3%)	2 (2.7%)	0	69 (92.0%)
Medium	2 (2.7%)	0	0	1 (1.3%)	3 (4.0%)
Large	1 (1.3%)	0	1 (1.3%)	1 (1.3%)	3 (4.0%)
Total	56 (74.4%)	13 (17.3%)	3 (4.0%)	2 (2.7%)	75

Not surprisingly, the two graves distinguished by the complex assemblage (Table 7.11) also have tumulus structures, though one of these occupies a medium size grave. In contrast, the five tumulus graves occupying small graves do not contain any grave goods. This observation is very interesting and suggests that the level of energy expenditure invested in grave construction is not directly related to economic standing or qualitative distinctions. Despite the lack of economic standing, effort on the part of affiliates is nevertheless expected at the time of death and directed toward the construction of special

structures. However, access to material resources undeniably increases the probability of burial elaboration and the implication of affiliates participating in the mortuary ritual.

Table 7.11: Comparison of assemblage types and tomb types in phase 1.

Tomb type	Offering categories				Total
	Empty	One Type	Two Type	Three Type	
Pit	51 (68%)	13 (17.3%)	3 (4.0%)	0	67 (89.3%)
Tumulus	5 (6.7%)	1 (1.3%)	0	2 (2.7%)	8 (10.7%)
Total	56 (74.7%)	13 (17.3%)	3 (4.0%)	2 (2.7%)	75

Summary

The determination of the mortuary program in phase 1 is important for the subsequent analysis to follow because it presents a social portrait of the Batatai community in its 'native' setting. In general, most individuals are not externally marked and inclusion in the cemetery confers most importantly membership in the community. This sense of collective identity is also supported by the overwhelming conformity in grave orientation toward the east (Figure 7.4b). Within the Batatai community, patterns of social differentiation are structured by ascription and personal achievements. As documented in the analysis of tumulus burials, the association of tumuli with extremely small and empty graves suggests that this key burial treatment may be marking an *ascriptive* status. Specifically, the particular effort accorded an individual lacking formal distinctions indicates a status independent of economic capability that nevertheless commands social recognition and duties to be paid. Thus, these small graves may represent young individuals who have not accumulated personal means, but by virtue of their birth in the kin system are important figures.

Individuals who are vertically differentiated from the rest of the community apparently occupy a corresponding status shared by the subset of tumulus individuals. In addition, the offerings found in these burials are internally more complex and quantitatively distinguished. As the analysis showed, the variability within each artifact category is due to the quantitative nature of the configuration. For example, the majority of burials with material offerings typically contain only one ceramic vessel or one ornament type or one weapon. However, the two individuals with three-type assemblage

have the complete ceramic vessels, paired weapon outfits, and waist ornaments. As discussed earlier, grave 279 is further distinguished by weaponry container, an oversized tripod and a jade cortex. The accumulative nature of this material distinction and association of these graves almost always with the longer grave plots suggest that these elevated differences may depend on personal achievements made through life. In effect, it is likely that the structural intersection of both achieved and ascribed dimensions are integral to the organization of high status.

Phase 2 (705 - 510 BC)

In continuation of trends from phase 1, the majority of burials (n=47 out of 73; 64.4%) in phase 2 do not have any mortuary offerings. The number of categorical offering types has expanded from only eight in the previous period to 13 different categorical types in phase 2. Grave offerings consist of three distinct functional categories: ceramics, bronze weaponry and ornaments. Seventeen artifact types are represented, including the introduction of three new types: medium size flared jars, bronze cauldron, and jade collared disk bangle. Objects with the highest frequency are the bronze blade (13.7%) and the ceramic tripod (13.7%). The quiver, bronze cauldron and jade bangle are the only objects with unique occurrences.

Material offerings

Ceramics

Eleven burials (15.1%) contain at least one ceramic vessel. The ceramic types are two times more common than the pattern observed for phase 1. The distribution of vessel configurations contrasts from phase 1 in that the three-vessels assemblage is the most prevalent offering type (9 burials; 12.3%) versus the unique occurrences of the one and two vessels assemblages. The common co-occurrence of tripod, constricted jar types (flared mouth jar and jar), and plate suggests that the meaningful unit of analysis within the ceramic assemblage is represented by the distinct set. As shown in Table 7.12a, I have categorized ceramic offerings into three types distinguished by the quantity of functional types. The higher rate of occurrence of the three-vessels type provides a striking contrast against the scarcity of one- and two-vessels types, an unexpected distribution pattern from the point of view of a cost model. Again,

this observation suggests the role played by ceramics may be structured by the funerary ritual system.

Table 7.12a: Distribution of individual ceramic types in phase 2.

	Tripod	Jar	Large flared jar	Medium flared jar	Plate
Count	10	9	8	3	8
Percentage	13.7%	12.3%	10.9%	4.1%	10.9%

Table 7.12b: Distribution of ceramic configurations in phase 2.

One-Vessel		**Two-Vessel** Constricted jars + plate	**Three-Vessel** Tripod + flared jar +jar + plate
Tripod	1		
Plate			
Large flared jar			
1 (1.4%)		1 (1.4%)	9 (12.3%)

Within the three-vessel assemblage, the number of sets present contributes to further internal variation. The three vessels assemblage in grave 265 is even more elaborate, containing sets of the three-vessel configuration, totaling 22 ceramic vessels (Figure 7.7). This rich ceramic assemblage is a unique occurrence within Phase 2 and alludes to the quantitative nature of differentiation within the ceramic offerings. The distribution of greater foodstuffs may represent differential access to staple resources or alternatively the wider network of participants at the funerary ritual. These possibilities are not mutually exclusive and will be discussed later.

The bronze cauldron is also functionally associated with food preparation and may provide similar ritual purposes as the ceramic vessels. The bronze cauldron is a unique occurrence found only in Grave 265. Based on the grave plan (Figure 7.7), the location of the cauldron in the vicinity of the ceramic offerings suggests that these vessels may have functioned together in the same ritual activity.

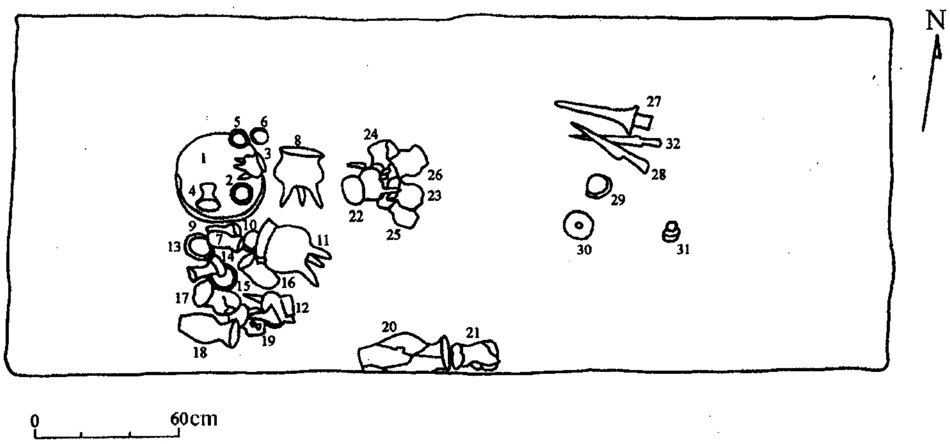


Figure 7.7. Plan view of burial M265. 1. Bronze cauldron. 2, 3, 5, 6, 10, 13, 15. Ceramic plates. 3, 8, 11, 12, 22. Ceramic tripods. 7, 9, 16 – 16. Ceramic jars. 27. Bronze halberd. 28. Bronze knife. 29. Jade collared disk bangle. 30. Bronze buckle. 31. Jade ear disk. 32. Bronze sword.

Bronze weaponry

The rate of occurrence of bronze weaponry has increased significantly from phase 1 such that 22 (30.1%) of the burials contain at least one bronze weapon implement. The implements divide into five functional groups previously summarized in chapter 6: hafted implements (halberd and ax), swords and blades, and ornate containers (quiver and sword sheath). In phase 2, the bronze knife (5 individuals; 6.8%) is introduced into the assemblage and occurs in lower frequency than the other implement types. As indicated in Table 7.13, halberds are again the most frequently occurring implement, being present in 19 (26%) of the burials. Swords and blades are again evenly divided (8 to10). The sword sheath and quiver are the least commonly occurring items, a pattern that is consistent with phase1.

The more commonly occurring implements further aggregate into sets as evidenced by patterns of co-occurrence. Within the grave assemblage, only three burials (4.0%) have a single weapon offering, while 18 individuals (24.7%) have paired weaponry sets comprised of a halberd and a blade (n=10; 13.7%) or sword (n=8; 10.9%). Because blades and swords never co-occur in the same grave and appear to be nearly evenly divided, the two implements are considered to be functional equivalents. The knife never co-occurs with the blade: three of the five occurrences are with paired halberd and sword sets.

Table 7.13: Distribution of bronze weapon implements in phase 2

	Halberd	Blade	Sword	Knife	Total
Halberd	1 (1.4%)	10 (13.7%)	8 (10.9%)	3 (4.1%)	22 (30.0%)
Blade	10 (13.7%)	0	0	0	10 (13.7%)
Sword	8 (10.9%)	0	0	3 (4.1%)	11 (15.1%)
Knife	3 (4.1%)	0	3 (4.1%)	2 (2.7%)	8 (11.0%)
	22 (30.0%)	10 (13.7%)	11 (15.1%)	8 (11.0%)	51

Taking into account the quantitative and qualitative nature of weaponry distributions, weaponry types are classified according to the following categories:

1. One weapon: Halberd (1) or Knife (2) = 3 (4.1%)
2. Paired weapon set: Halberd + Sword (8)/ Blade (10) = 18 (24.7%)
3. Full weapon set: Halberd & Sword + Knife (2) or Ax (1) = 3 (4.1%)
4. Weapon container: Sheath (2), Quiver (1) = 3 (4.1%)

Ornaments

Ornaments are the least frequently occurring class of offerings in phase 2 with only nine (12.3%) of the graves containing at least one type of ornament. Ornaments consist of two distinct types of raw materials (bronze and jade) that are each associated with decorating respective parts of body (waist, abdomen/neck and ear, and wrist). As presented in Table 7.14, waist ornaments are the most commonly occurring items, occurring in seven graves (9.6%). The occurrence rate for jade ear disks has declined from the previous phase to only three (4.1%) graves (from 8.6% in phase 1). The neck ornament consists of a jade tubular bead, which is only present in two graves. The jade bangle is a new ornament type. As mentioned in chapter 6, the thinness of this collared disk suggests a high level of craftsmanship. Its association with elite burials in the Dian region and iconographic depictions in conjunction with elite attire also point to the unique nature of this ornament. The bangle's unique occurrence in phase 2 may be a marker of qualitative distinction.

Based on the low rate of occurrence across every ornament type, patterns of ornament co-occurrence are not strong. As Table 7.14 shows, it appears that combinations of different ornament pairings are all unique cases, which contrasts with phase 1 observations showing jade ear disks and neck ornaments to be mostly distinct. Because no clear co-occurrences are detected, ornaments are classified according to their decorative function.

Table 7.14: Distribution and co-occurrence of ornaments in phase 2.

	Buckle	Button	Jade Ear disk	Neck Orn	Jade Bangle	Total
Buckle	1 (1.4%)	1 (1.4%)	1 (1.4%)	0	1	3 (4.1%)
Button	1 (1.4%)	2 (2.7%)	1 (1.4%)	1 (1.4%)	0	5 (6.8%)
Jade Eardisk	1 (1.4%)	1 (1.4%)	1 (1.4%)	1 (1.4%)	0	4 (5.4%)
Neck Orn	0	1 (1.4%)	1 (1.4%)	0	0	2 (2.7%)
Jade Bangle	1 (1.4%)	0	0	0	0	1 (1.4%)
	3 (4.1%)	5 (6.8%)	4 (5.4%)	2 (2.7%)	1 (1.4%)	

1. Waist Ornament: Button(4), Buckle (2) or Buckle and button (1) = 7 (8.1%)
2. Ear Ornament: Jade ear disk = 4 (5.4%)
3. Neck Ornament: Jade bead = 2 (2.7%)
4. Wrist Ornament: Jade Bangle = 1 (1.4%)

Summary of categories of offering types

Based on the patterns observed from the above analyses, Table 7.15 summarizes the 13 offering types within each "functional" category. The pervasiveness of certain material treatments versus other rare occurrences within each functional category alludes to the potential for some types to represent qualitative distinctions, for example, the scarcity of the bronze containers in the weaponry category. The following section will explore variability within the configuration of grave assemblages to detect patterns of differentiation.

Table 7.15: Distribution of types within each functional category in phase 2.

Ceramics		Weaponry		Ornaments		Other	
One-vessel	1 (1.4%)	1-weapon	3 (4.1%)	Waist	4 (5.5%)	Bronze Cauldron	1 (1.4%)
Two -vessel	1 (1.4%)	Paired	15 (20.5%)	Ear	1 (1.4%)		
Three-vessel	9 (12.3%)	Paired + Container	1 (1.4%)	Waist + Ear/Neck	2 (2.7%)		
		Full + Container	3 (4.1%)	Ear + Neck	1		
				Waist + Ear + Wrist	1		
	11 (15.1%)		22 (30.1%)		9 (12.3%)		1 (1.4%)

<u>The configuration of grave assemblages</u>

The most common grave assemblage is no offerings (64.4%). Thus, as in phase 1, the normative treatment is simply direct interment. Of the remaining 26 graves with at least one grave offering, three primary assemblage configurations characterize the variation in phase 2. The variation is organized along lines of increasing elaboration in the quantity of functional categories represented. Thus, burials with one category of offerings contain a unique occurrence of either a ceramic vessel, or bronze weaponry, or ornament type. The general expectation is that increasing levels of mortuary elaboration should be inversely proportional to its frequency. In phase 2, the proportional scaling along complexity of grave assemblage is more pronounced than in phase 1 as shown in Table 7.16: one category of offerings is proportionally much higher (21.9%) than two (9.6%) or three categories (4.1%). This preliminary pattern suggests that that the pervasiveness of a mortuary offering type is inversely proportional to its cost or value as represented by its functional complexity.

Table 7.16: The distribution of assemblage types in phase 2.

1-Category		2-Categories		3-Categories	
Ceramic	3 (4.1%)	Ceramic + Weapon	2 (2.7%)	Ceramic + Weapon + Ornament	3 (4.1%)
Weaponry	13 (17.8%)	Ceramic + Ornament	3 (4.1%)		
Ornament	0	Weapon + Ornament	2 (2.7%)		
	16 (21.9%)		7 (9.6%)		3 (4.1%)

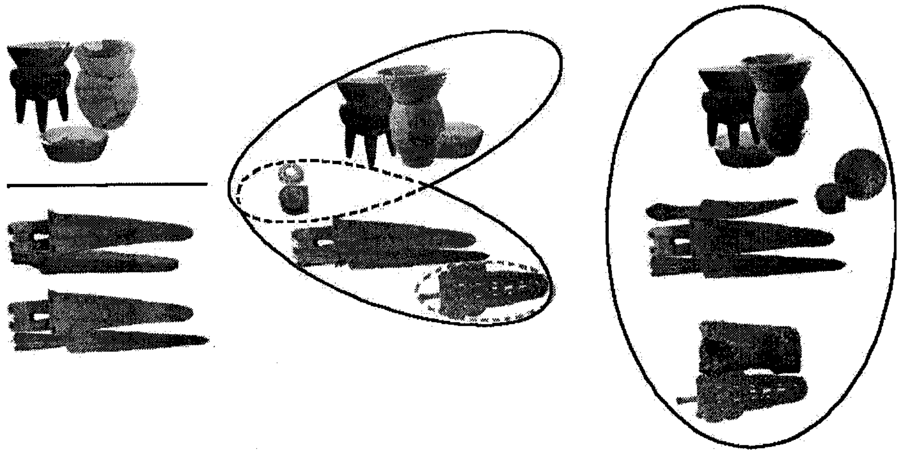


Figure 7.8. Increasing elaboration in the configuration of assemblage types ranging from 1-category to 3-category type assemblages.

Within the 1-category assemblages, ceramic and weaponry bearing graves contain the most commonly occurring artifact types within their respective functional categories. In the two-category group, there is minor variation in the configuration of grave offerings since most assemblages are primarily different configurations based on the same range of artifact types (three-vessel set, paired weapon outfit, and waist ornament or jade ear disk) (Figure 7.8). Among ceramic and weaponry assemblages, the most common artifact types from each functional category are combined together (three-vessel set and paired weapon outfit). Among ceramic and ornament assemblages, the typical configuration also contains the three-vessel set with either a waist ornament or jade ear disk. However, the two individuals with a weapon and ornament assemblage have disparate assemblage configurations. Grave 243 overlaps in structure with other counterparts in having a paired weapon set and waist ornament. Grave 219 contains the "full" weaponry set, a sword sheath and waist ornaments, showcasing the less commonly occurring weaponry types.

It is typically within the 3-categories assemblages where the least commonly occurring offerings appear, suggesting formal differences in the nature of the material treatment. Beyond having the most complex grave configurations, these three burials are also exclusively associated with the least common or "rare" artifact types within the material categories. For example, two of the three individuals (Graves 206, 246, 265) with this type of assemblage are equipped with the "full" weaponry set and a bronze

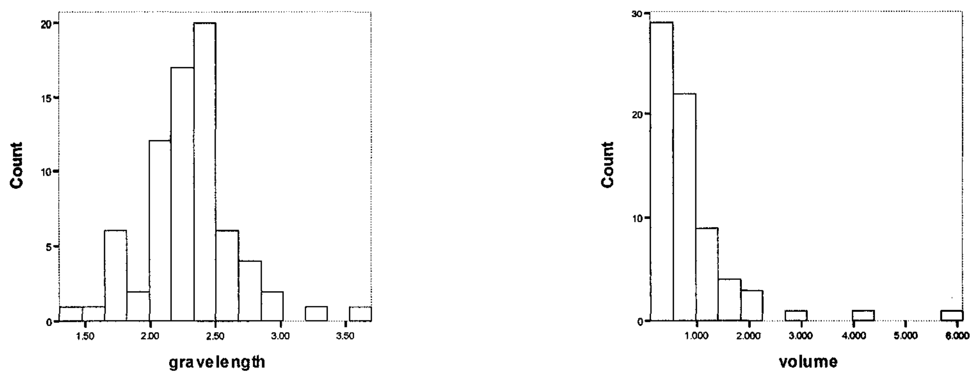
weaponry container. All three individuals also have a bronze waist ornament and two individuals also have jade ear disks. The convergence between the complexity of assemblage and distribution of "rare" artifact types is important. Grave 265 is further distinguished from these other two individuals in having the greatest quantity of food offerings (five sets of ceramic vessels and the bronze cauldron) and the jade collared bangle. No other individual is adorned with this wrist ornament.

The above discussion shows that the same range of artifact types contributes significantly toward the configuration of the less elaborate grave assemblages. In contrast, 3-categories assemblages tend to contain more unique material components. The particular contents of grave 219 in the 2-categories group however show greater similarities with the 3-categories group. The analysis precluded its inclusion in the 3-categories group because of the lack of ceramic vessels in its assemblage. As discussed earlier, it is not scarcity that determines the absence of ceramics. Thus, an individual with elaborate weaponry outfit but lacking ceramics is an irregularity in the overall funerary structure, suggesting that different dimensions of the mortuary program may be instrumental.

Grave treatments

Grave length

The distribution of grave lengths shows two modal size groups. Seventy-one burials fall in the main size group ranging from 1.30 m – 3.00 m in length, with the most common grave length measuring 2.40 m. Like the previous period, the positive skew produced by the extremely short graves suggests the possibility of other "breaks" in grave size. However, as mentioned earlier, these "breaks" could be obscured for a variety of reasons, such as ritual proscriptions. Two burials with grave lengths exceeding 3.00 m form an outlier group. This distribution is consistent with the pattern observed in the previous period.



Mean 2.30 Median 2.30 Mode 2.40

Figure 7.9 a and b. The distribution of grave lengths and grave sizes in phase 2.

Grave size and architecture

The distribution of grave volumes shows one modal group ranging from 0.150 - 2.20 m^3 and two outliers measuring 2.90 – 4.00 m^3 and one exceptionally large grave (> 6.0 m^3). These grave volumes correspond with the size groups identified in phase 1. Paralleling previous patterns is the lack of direct correspondence between tomb type (pit versus tumulus) and grave size. Of the four tumulus burials in this phase, three consist of small graves, while the fourth occupies the largest burial plot. Neither of the two medium graves have tumulus structures.

Table 7.17: Comparison of tomb sizes and tomb types in phase 2.

Tomb Size	Tomb Type		Total
	Pit	Tumulus	
Small	67 (91.8%)	3 (4.0%)	70 (95.9%)
Medium	2 (2.7%)	0	2 (2.7%)
Large	0	1 (1.4%)	1 (1.4%)
Total	69 (94.5%)	4 (5.5%)	73

Patterns of differentiation by grave size and material treatment

The elaboration of material treatment appears to correlate more strongly with tomb length and tomb size than during phase 1. The majority of small graves (46; 63.0%) do not have any offerings (Table 7.18). As observed in the previous period, 10 of the 11

smallest and shortest graves (<1.90 m in length) belong to this subset of empty burials. In other words, grave length decreases with the increasing addition of grave goods. In contrast, two of the three graves (#206 and #265) with the most elaborate three category offerings occupy the longest (3.26 and 3.70 m) and largest graves (4.00 m^3 and 6.00 m^3). Thus, grave length and size appear to correspond roughly with the elaboration of grave offerings. These two large graves also contain complete ceramic sets, bronze weaponry containers, full weaponry outfits, and waist ornaments. The largest grave (#265) is further distinguished by the multiple sets of ceramic vessels, the bronze cauldron and jade collared disk. These objects again are unique offering types within each artifact category.

Table 7.18: Comparison of tomb sizes and assemblage categories in phase 2.

Tomb size	Offering categories				Total
	Empty	One	Two	Three	
Small	45 (61.6%)	15 (20%)	9 (12.3%)	(M246)1	70 (95.9%)
Medium	1 (1.4%)	0	0	(M206)1	2 (2.7%)
Large	0	0	0	(M265)1	1 (1.4%)
Total	46 (63.0%)	15 (20%)	9 (12.3%)	3 (4.1%)	73

In contrast to phase 1 however, not all graves containing a complex assemblage necessarily have a tumulus structure. Two of these individuals have only a pit grave. Only grave 265, the exceptionally well endowed and largest grave, receives a tumulus structure. The remaining three tumulus burials contain only one and two categories offering types. In effect, an individual can attain all the economic distinctions available in the mortuary assemblage but not command the social obligations and support necessary for the construction of a tumulus. This pattern suggests that the level of energy expenditure received in grave construction is not entirely related to economic standing or qualitative distinctions. The inclusion of bronze weapon containers in these two larger burials however does suggest that these individuals have achieved statuses that link them to the apical individual.

Table 7.19: Comparison of tomb types and grave assemblages in phase 2.

Tomb type	Offering categories				Total
	Empty	One	Two	Three	
Pit	46 (63%)	13 (17.8%)	8 (11%)	2 (2.7%)	69 (94.5%)
Tumulus	0	(191 and 208)2	(219)1 (1.3%)	(265)1	4 (5.5%)
Total	46 (63%)	15 (20.5%)	9 (12.3%)	3 (4.1%)	73

Of the three remaining burials with tumulus structures, grave assemblages consist solely of weaponry offerings. One individual (M191) has a single bronze blade and furthermore occupies one of the shortest graves (1.50 m). The two other individuals (M208 and 219) have paired weaponry outfits and their grave lengths approximate the median value. The individual with the 2-categories offering (M219) is further distinguished by a bronze sword sheath and a full weapon set. If individuals of different physical height and presumably age and material wealth are accorded special tomb markers, then it is possible that the tumulus structure represents a marking independent of life status, reserved instead for individuals holding a particular ascriptive status.

Summary

In continuation of phase 1 funerary traditions, most individuals do not receive extensive material treatments. The most apparent external marker of individual identity is simply inclusion in the cemetery. Inclusion in the cemetery mound itself marked an individual's identity as a member of the community and some standing that warrants burial in the mound. Status differentiation appears to be largely structured by differential abilities leading to the accumulation of certain weaponry objects.

The only case in which levels of material and grave treatments converge is found in grave 265. Again, the primary referents of this elevated status recall ritual observances from phase 1. In particular, this individual received a tumulus structure, indicating an expanded involvement of mourners in the grave construction. The ability to command social obligations and duties toward the mounting of a spatial marker probably derives from ritual prescriptions defined by the geneaological order. The multiple sets of food vessels associated with this individual further underscore the collective undertaking associated with this particular individual's funerary event.

Phase 3 (510 - 315 BC)

In phase 3, the array of mortuary goods has increased significantly from the previous phase. The proportion of individuals with at least one grave offering has increased significantly (39 of 51: 76%), indicating a reversal of earlier trends. Grave offerings again consist of three distinct functional categories: ceramics, bronze weaponry and ornaments. Eighteen object types are present in the phase 3 assemblage, including the introduction of new ceramic forms (pedestal plate and globular jar) and a hafted weaponry implement (pick). Objects with the highest frequency are the ceramic plate (19.6%) and the jade ear disk (17.6%). Objects with nearly unique occurrences are again distinct weaponry types: the bronze sheath, quiver and pick.

Material offerings

Ceramics

In contrast to the two previous phases, ceramics have a considerably wider distribution in phase 3 (16 burials; 31.4%) than in earlier phases. As shown in Table 7.20a, the ceramic types all show a rate of occurrence that is two times higher than the pattern observed for phase 1. New ceramic wares (pedestal plate and globular jar) are introduced into the ceramic assemblage. As shown in Table 7.20a, their rate of occurrence is low compared with the conventional ware types. The addition of the pedestal plate into existing three vessels arrangements presents a novel configuration whose different functional role warranted the creation of a distinct four vessels assemblage type.

The distribution of vessel configurations contrasts with phase 2 in that the one-vessel assemblage has become the most prevalent offering type (6 burials; 11.8%) versus the infrequent occurrences of the three- (2 burials; 3.9%) and four-vessels (3 burials; 5.9%) assemblages. This pattern is the exact inverse of phase 2. As shown in Table 7.20, ceramic offerings are classified into four types distinguished by the number of functional types represented.

Table 7.20a: The distribution of individual ceramic types in phase 3.

	Tripod	Jar	Large	Medium	Globular	Plate	Pedestal Plate
Count	6	8	9	2	2	10	4
Percentage	11.8%	15.7%	17.6%	3.9%	3.9%	19.6%	7.8%

Table 7.20b: The distribution of ceramic configurations in phase 3.

One-vessel		Two-vessel Constricted jars + plate	Three-vessel Tripod + flared jar +jar + plate	'Full'-vessel Tripod + flared jar +jar + ped. Plate + plate
Tripod	1 (1.8%)			
Jar	2 (3.9%)			
Pedestal Plate	1 (1.8%)			
Plate	2 (3.9%)			
	6(11.8%)	5(9.8%)	2(3.9%)	3(5.9%)

Within the 'full' vessel assemblage, the unique occurrence of an oversized tripod again presents an anomalous case. All nine tripods in the phase 3 assemblage conform to the standard size class with the exception of this case (artifact M183:1), which is of the same proportions as the oversized tripod described in phase 1.

Bronze weaponry

Weaponry continues to be the commonly occurring class of artifacts in the assemblage, with nearly 40% of the graves containing at least one weapon. The implements divide into five functional groups previously summarized in chapter 6: hafted implements (halberd and ax), swords/blades, and knives and ornate containers (quiver and sword sheath). As shown in Table 7.21, all weaponry types, with the exception of the containers and the pick, have comparatively the same distributions.

The configuration of weaponry sets, however, departs from previous patterns and tends toward a trend of a simplified single implement type. Specifically, paired weaponry outfits decrease in frequency such that only five individuals (9.8%) have this weaponry type. This is a significant decrease from phase 2 where 24.6% of the graves contained paired weaponry outfits. Instead, 12 of the 17 burials containing weaponry only have a single implement. Paired weaponry outfits consist entirely of halberd and sword combinations; halberds and blades cease to co-occur. The blade and knife are only included as singular offerings, with the exception of one instance containing the full

weapon set. The broad trend is summarized by the proliferation of individuals equipped with one form of "thrusting" weaponry that is roughly equally divided between blades (6) and knives (5). Furthermore, the approximately equal distribution of blade, knife and paired weaponry in 6:5:5 ratio is particularly interesting. This proportional symmetry does not necessarily support a distribution pattern scaled by cost but the potential to be marking different martial identities or positions.

Table 7.21: The distribution and co-occurrences of weapon implements in phase 3.

	Halberd	Blade	Sword	Knife	Total
Halberd	0	0	5 (9.8%)		5 (9.8%)
Blade	0	6 (11.8%)	0	0	6 (11.8%)
Sword	5 (9.8%)	0	1 (2%)	0	6 (11.8%)
Knife		0	0	5 (9.8%)	5 (9.8%)
Total	5 (9.8%)	6 (11.8%)	6 (11.8%)	5 (9.8%)	

Taking into account the quantitative and qualitative trends in weaponry distributions, weaponry types are classified according to the following categories:

1. One weapon: Blade (6), Sword (1) or Knife (5) = 12 (24.0%)
2. Paired weapon: Halberd + Sword (5)/ Blade (0) = 5 (9.8%)
3. Full weapon set: Halberd + Sword + Knife = 1 (2.0%)
4. Weapon container: Sheath 2 (3.9%), Quiver 2 (3.9%)
5. Other: Pick 1 (2%)

<u>Ornaments</u>

Ornaments become significantly more common in the burial assemblage of phase 3, where 15 (29.4%) of the individuals are adorned with at least one ornament type. This increase in ornament distribution stands in stark contrast to the 12.3% of graves with ornaments in phase 2. Waist ornaments are the most commonly occurring items, being present in ten graves (19.6%). Jade ear disks are present in five graves (9.8%). In effect, the increase in waist ornaments during phase 3 is mainly accountable for the increase in

ornament distribution. The neck ornament and collared jade disk bangle maintain distribution trends from phase 2: the jade tubular bead is again only present in two graves and the collared jade disk bangle is only present in one burial.

Patterns of ornament co-occurrence are not strong. As shown in Table 7.22, combinations of different ornament pairings appear as unique cases, with the exception of the bronze button, which appears to be a stand-alone ornament. Since no clear structure of ornament configurations is detected, ornaments are classified according to their decorative function, though the possibility of waist ornaments being internally differentiated between buckles and buttons will be considered.

Table 7.22: The distribution and co-occurrences between ornament types in phase 3.

	Buckle	Button	Jade Ear disk	Neck Orn	Jade Bangle	Total
Buckle	3 (5.9%)	1 (2%)	2 (3.9%)	0	0	6 (11.8%)
Button	1 (2%)	6 (11.8%)	1 (2%)	0	1 (2%)	9 (19.7%)
Jade Eardisk	2 (3.9%)	1 (2%)	1 (2%)	1 (2%)	0	5 (9.8%)
Neck Orn	0	0	1 (2%)	1 (2%)	0	2 (3.9%)
Jade Bangle	0	1 (2%)	0	0	0	1 (2%)
Total	6 (11.8%)	9 (19.7%)	5 (9.8%)	2 (3.9%)	1 (2%)	

1. Waist Ornament: Button (6), Buckle (3) or Buckle and button (1) = 10 (20%)
2. Ear Ornament: Jade ear disk 5 (9.8%)
3. Wrist Ornament: Jade Bangle 1 (2.0%)

Summary of categories of offering types

Based on the patterns observed from the above analyses, table 7.23 summarizes the range of offering types within each "functional" category. There are 13 distinct offering types responsible for the variation in grave offerings. The pervasiveness of certain material treatments versus other rare occurrences within each functional category alludes to the potential for some types to represent qualitative distinctions. The following

section will explore variability within the configuration of grave assemblages to detect patterns of differentiation.

Table 7.23: The distribution of types within each functional category in phase 3.

Ceramics		Weaponry		Ornaments	
One-vessel	6 (11.8%)	1-weapon	12 (23.5%)	Waist	9 (17.6%)
Two-vessel	5 (9.8%)	Paired	5 (9.8%)	Ear	1 (2%)
Three-vessel	2 (3.9%)	Paired + Container	3 (5.9%)	Waist + Ear/Neck	3 (5.9%)
'Full'-vessel	3 (5.9%)	Full + Container	1 (2.0%)	Ear + Neck	1 (2%)
				Waist + Ear + Wrist	1 (2%)
Total	16 (31.4%)		20 (39.2%)		15 (29.4%)

The configuration of grave assemblages

In a reversal of earlier trends, 76% of the burials in phase 3 contain at least one grave offering. Three primary assemblage configurations characterize the variation in phase 3. The most common grave assemblage contains one category of grave good and is evenly divided between ceramic offerings (10 burials; 20%) and weaponry offerings (10 burials; 20%). The variation is organized along lines of increasing elaboration in the quantity of functional categories represented.

The general expectation is that increasing levels of mortuary elaboration should be inversely proportional to its occurrence. In phase 3, grave elaboration appears to more closely "fit" this expectation than distribution trend in phase 2: one category of offerings is proportionally much higher (50.0%) than two (9.8%) or three categories (7.8%). While two and three categories assemblages occur at a similar rate, the pervasiveness of the "simple" assemblage does approximate a cost model of distribution.

Table 7.24: Distribution of grave assemblage types in phase 3.

1-Category		2-Categories		3-Categories	
Ceramic	10 (20%)	Ceramic + Weapon	0	Ceramic + Weapon + Ornament	4 (7.8%)
Weaponry	10 (20%)	Ceramic + Ornament	2 (3.9%)		
Ornament	5 (9.8%)	Weapon + Ornament	3 (5.9%)		
Total	25 (50%)		5 (9.8%)		4(7.8%)

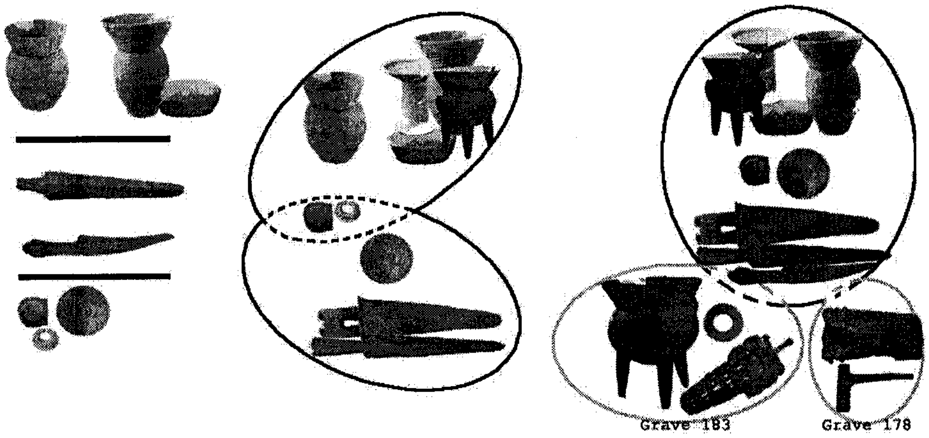


Figure 7.10. Increasing elaboration in the configuration of assemblage types ranging from 1-category to 3-category type assemblages.

Within the 1-category assemblages, the majority of individuals with exclusively ceramic or weaponry offerings tend to contain only one vessel or one implement (Figure 7.10). Specifically, with the exception of two individuals having three-vessel offerings, five of the ten individuals with ceramics contain one vessel and three graves contain two vessels configurations (constricted jar and plate). Among graves containing weapons, the ten burials are evenly divided between offerings of a knife or a blade. Of the five graves with ornament offerings, the typical configuration consists of a solitary waist ornament (buckle or ornament) with the possible addition of jade ear disks found in two graves.

Within the 2-categories assemblages, the two possible configuration types consist of ornaments with either ceramics (n=2) or weapon implements (n=3). Ceramic contents within the two-category type assemblage include both one vessel and the 'full'-vessel configurations and associated ornaments include a waist button and jade ear disk. Among the three individuals with weapon implements, the type of implement is clearly distinguished from that of the 1-category assemblage. Weaponry offerings consist entirely of paired outfits and the associated ornament consists of a waist implement. The weaponry content of grave M180 is further distinguished by the inclusion of a sword sheath.

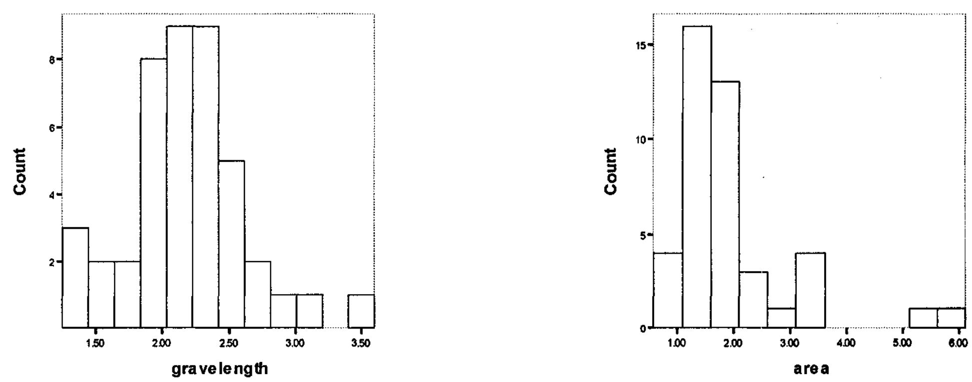
It is within the 3-categories assemblages where the least commonly occurring artifacts appear suggesting formal differences in the nature of the material treatment.

Beyond having the most complex grave configurations, these four burials are also exclusively associated with the "rare" artifact types within the material categories. For example, all four individuals are equipped with a paired weaponry outfit; grave M178 contains the full weaponry set and the unique bronze pick implement. In addition, bronze weaponry containers are distinctly associated with two individuals (grave M178 and grave M183). Three individuals also have the 'full'-vessels type ceramic assemblage characterized by the pedestal plate: grave M183 receiving further quantitative distinction with an oversized tripod. Grave M183 is also the only individual adorned with the jade collar disk bangle. The convergence between the complexity of assemblage and a preferential distribution of "rare" artifact types is consistent with earlier trends.

Grave treatments

<u>Grave length</u>

The distribution of grave lengths shows two modal groups ranging: short graves measuring under 1.50 m in length and a primary group ranging from 1.25 m – 3.30 m in length (Figure 7.11a). Seventy-one burials occupy graves in the primary length group. One burial with grave length exceeding 3.50 m forms an outlier. These patterns correspond to trends in phase 2.



a. Mean 2.20m Median 2.20m Mode 2.00m
18 missing values

b. Mean 2.32 Median 1.61 Mode 1.58

Figure 7.11a and b. Distribution of grave lengths and grave sizes in phase 3.

Grave size and architecture

Figure 7.11b shows the distribution of grave areas, which has produced one primary size group and two outliers in correspondence with the grave lengths. Graves range from 0.59 – 3.50 m^2 and two outliers with the largest graves (> 5.0 m^2). Due to the absence of depth measurements on many graves in phase 3, grave area is used instead as a variable for measuring grave size. The medium size class (2.50 – 3.60 m^2) present in earlier phases does not produce a strong pattern in phase 3. Paralleling previous patterns is the lack of direct correspondence between tomb type (pit versus tumulus) and grave size. Of the five tumulus burials in this phase, three consist of small graves and the two remaining individual occupy the largest burial plot. As shown in Table 7.25, none of the five medium graves have tumulus structures. In effect, tomb size does not apparently correspond directly with level of energy expenditure.

Table 7.25: Comparison of tomb types and tomb sizes in phase 3.

Tomb size	Tomb type		Total
	Pit	Tumulus	
Small	33 (64.7%)	3 (5.9%)	36 (70.6%)
Medium	5 (9.8%)	0	5 (9.8%)
Large	1 (2.0%)	2 (3.9%)	3 (5.9%)
Total	39 (76.5%)	5 (9.8%)	44 (84.3%)

Patterns of differentiation by grave size and material treatment

In agreement with trends from previous phases, material elaboration does not correlate strongly with tomb size. According to Table 7.26, graves with two or more categories of offerings occupy both small and medium size graves. Even among small size graves, six individuals (16.7%) have two or more grave goods. Interestingly, the three medium graves with single offerings do not vary from the small graves in content suggesting these two size classes are not differentiated by material elaboration. However, the only weaponry type found in association with small graves consist of either a single knife (n=5) or a single blade (n=5). The five graves with 2-categories of offerings all contain ornaments paired with either weapons or ceramic vessels.

Table 7.26: Comparison of grave assemblage and tomb sizes in phase 3.

Tomb size	Offering categories				Total
	Empty	One	Two	Three	
Small	13 (25.5)	17 (33.3%)	5 (9.8%)	1 (2.0%)	36 (70.6%)
Medium	0	3 (5.9%)	0	2 (3.9%)	5 (9.8%)
Large	0	1 (2.0%)	0	1 (2.0%)	2 (3.9%)
Total	13 (25.5%)	21 (41.1%)	5 (9.8%)	4 (7.8%)	43

Of the four graves with elaborate offering types, their assemblages are distinguished by the inclusion of more comprehensive weaponry types (paired weaponry types), weaponry containers, and ceramic sets. Despite the elaboration of material treatment, these graves also occupy small and medium size graves (Table 7.26). The largest grave (>6.00 m), M183, however is formally distinguished from the three smaller counterparts (M158, 178, and 181) in having the "full" weaponry set, oversized tripod vessel, and the jade collared disk bangle. The convergence of all these markers and tomb size as a primary axis of differentiation parallels earlier trends.

Recalling patterns from phase 2, material elaboration varies independently from the level of effort expenditure (Table 7.27). Graves with few material offerings have a tumulus structure while three of the four graves with elaborate assemblages only have pit tombs. In effect, an individual can attain all the economic distinctions available in the mortuary assemblage but not command the social obligations and support necessary for the construction of a tumulus. Only grave M183, the exceptionally well endowed and largest tomb, receives a tumulus structure. Interestingly, the empty grave with a tumulus structure occupies one of the shortest tomb pits. The two tumulus graves with single offerings contain a bronze sword and a ceramic set demonstrating that that the level of energy expenditure received in grave construction is not entirely related to economic standing or qualitative distinctions.

Table 7.27: Comparison of grave assemblages and tomb types in phase 3.

Tomb type	Offering categories				Total
	Empty	One	Two	Three	
Pit	16 (31.4%)	22 (43.1%)	6 (11.8%)	3 (5.9%)	46 (90.2%)
Tumulus	1 (2.0%)	2 (3.9%)	0	1 (2.0%)	5 (9.8%)
Total	17 (33.3%)	24 (47.1%)	6 (11.8%)	4 (7.8%)	51

Summary

In general, the wider distribution of goods in phase 3 departs from previous phases where the majority of burials did not contain offerings. While grave goods become more common, the overall structure of the mortuary community appeared to maintain existing ritual patterns. The simplest burials consisted of small pit tombs lacking any offerings (n=16; 31.4%). In accordance with patterns from previous phases, within this subset are the shortest graves (<1.80 m in length) suggesting that grave offerings may pertain to achievements gained through life cycle.

The wider distribution of bronze weaponry in phase 3 clarified the differentiation of social positions according to martial capabilities. Specifically, graves with either bronze knives or bronze blades are almost exclusively associated with small graves. Furthermore, these two weaponry types are always segregated from halberds and swords. Burials containing halberd and sword (n=5) also tend to occupy graves longer than 2.50 m, the upper limit of the main modal group. And only individuals with halberds and swords can receive the other markers of distinction (sword sheath, quiver, pick, and lion/monkey buckle) linked to the most lavishing equipped individual. This distinguished individual maintains the same symbolic markers from the previous phases, mainly the oversized tripod and jade collared disk.

Vertical differentiation appears to be structured by the intersection of achieved and ascribed dimensions. While "valuable" bronze weapons contribute to social differentiation, it is likely these symbols represent statuses relating to martial capabilities or rewards achieved through life based on their association almost entirely with longer graves. These individuals are still precluded from receiving tumulus structures. Only with grave M183 do the level of effort expenditure and material treatments converge

across all variables. This individual, unlike the high "warrior" counterparts, can command the social duties and support necessary for the construction of a tumulus. This may explain why the uniquely oversized ceramic tripods and multiple vessel assemblages are exclusively found with these individuals in each of the preceding phases as well. Thus the social and political nature of this high status potentially entails a degree of economic reciprocity wherein staple resources are expected to be distributed at the funeral event.

PHASE 4 (315 - 120 BC)

Phase 4 is characterized by the introduction of new object types across all three categories of mortuary goods. Overall, 53 burials (72.6%) contain at least one grave offering, consistent with the pattern observed in phase 3. Grave offerings again consist of three distinct functional categories: ceramics, bronze weaponry and ornaments. Twenty-two object types are present in the phase 4 assemblage, including the introduction of a new ceramic form (shouldered jar), the bronze spear, the bronze bangle, agate button and lead ingots. Objects with the highest frequency are the ceramic tripod (12.2%) and the bronze knife (12.2%). Interestingly, weapon containers (sheath and quiver) are absent from the assemblage. The only objects with unique occurrences are the lead ingot, ceramic cup and bronze armor.

Material offerings

Ceramics

In phase 4, the distribution of ceramic offerings (16 burials; 21.9%) decreases in frequency from phase 3 (16 burials; 31.4%). While individual ceramic types also show a decreasing rate of occurrence, the proportional representation of the individual types accords with previous trends. As shown in Table 7.28a, tripod, jar and plate remain the most commonly occurring items, suggesting the continued importance of conventional assemblages. The decline in constricted vessel forms (large and medium flared jars) may be associated with the introduction of a new counterpart vessel, the shoulder jar vessel. Pedestal plates remain the least commonly occurring vessel form, with the exception of the cup. As mentioned in chapter 6, the ceramic cup is undecorated and its fabric and quality do not distinguish it from the other conventional forms. Beside this

one idiosyncratic inclusion, one of the shoulder jars is distinguished in having a slipped surface decorated with a painted red band. As mentioned in chapter 6, the fine texture of the paste and reduced firing conditions associated with this vessel are entirely unique for the Qujing region, with known parallels in the Lake Dian cemeteries.

Table 7.28a: The distribution of individual ceramic types in phase 4.

	Tripod	Jar	Large	Medium	Cup	Shoulder Jar	Plate	Pedestal Plate
Count	9	6	3	3	1	3	5	2
Percentage	12.2%	8.2%	4.1%	4.1%	1.4%	4.1%	6.8%	2.7%

Table 7.28b: The distribution of ceramic configurations in phase 4.

One-vessel		**Two-vessel** Tripod + constricted jar or Constricted jar + plate		**Three-vessel** Tripod + flared jar +jar + plate	
Tripod	1 (1.4%)	Tripod + Jar or Flared jar or Shoulder jar	4 (5.5%)		2 (2.7%)
Jar	2 (2.7%)	Tripod + Ped.plate	1 (1.4%)		
Flared jar	1 (1.4%)	Shoulder jar + plate	1 (1.4%)		
Shoulder jar	1 (1.4%)				
Cup	1 (1.4%)				
Plate	2 (2.7%)				
	8 (11.0%)		6 (8.2%)		2 (2.7%)

As shown in Table 7.28b, ceramic offerings are classified into three types distinguished by the number of functional types represented. The distribution of vessel configurations parallels phase 3 in that the one vessel assemblage remains the most prevalent offering type (8 burials; 11.0%) versus the infrequent occurrences of the three vessels assemblages (2 burials; 2.7%). Again, the relative pervasiveness of the one-vessel type in comparison to the scarcity of three vessels types is striking. Like phase 3, however, the proportion of graves with one versus two-vessels offerings is nearly equal. Unlike the previous phases, no ceramic assemblage appears to be quantitatively distinguished by an oversized tripod or multiple vessel sets.

Bronze weaponry

Weaponry continues to be the most commonly occurring class of artifacts in the assemblage, with nearly 34.2% (25 individuals) of the graves containing at least one weapon. The implements divide into five functional groups previously summarized in chapter 6: hafted implements (halberd and ax/chisel), swords, blades, and knives. All

weaponry types, with the exception of the bronze knife, have comparatively the same distributions (4 individuals; 5.5%). The bronze knife has become the most commonly occurring implement (11; 15.1%). Least common is the unique occurrence of the bronze armor.

The configuration of weaponry sets continues to follow the trend toward simplified single implement inclusions. Paired weaponry outfits decrease in frequency such that only six individuals (8.2%) have this weaponry type while single weaponry inclusions are the most common and are found in 18 burials (24.7%). The knife, spear and ax are typically included as single inclusions. The composition of paired weaponry sets is more idiosyncratic. Four paired sets comprise of a halberd with a sword, blade or knife thus conforming to the conventions of combining a hafted with a thrusting implement. The other three sets however present unusual combinations of knife and spear and one outfit made up of sword and blade. Sword and blade have never been paired together.

Table 7.29: The distribution and co-occurrences of implement types in phase 4.

	Halberd	Blade	Sword	Knife	Spear	Ax/Chisel	Total
Halberd	1 (1.4%)	1 (1.4%)	2 (2.7%)	1 (1.4%)	0	0	5 (6.8%)
Blade	1 (1.4%)	2 (2.7%)	1 (1.4%)	0	0	0	4 (5.5%)
Sword	2 (2.7%)	1 (1.4%)	1 (1.4%)	0 (1.4%)	0	0	4 (5.5%)
Knife	1 (1.4%)	0	0	9 (12.3%)	1 (1.4%)	0	11 (15.1%)
Spear	0	0	0	1 (1.4%)	3 (4.1%)	0	4 (5.5%)
Ax/Chisel	0	0	0	0	0	4 (5.5%)	4 (5.5%)
Total	5 (6.8%)	4 (5.5%)	4 (5.5%)	11 (15.1%)	4 (5.5%)	4 (5.5%)	

Taking into account the quantitative and qualitative trends in weaponry distributions, weaponry types are classified according to the following categories:

1. One weapon: Blade (1), Sword (1), Knife (7), Ax (6) or Spear (3) = 20 (27.4%)
2. Paired weapon: Halberd + [Sword (2), Blade (1), Knife (1), Sword + Blade (1)];
3. Knife + Spear (1) = 6 (8.2%)
4. Weapon container: Sheath (0), Quiver (0)
5. Other: Armor (1)

Ornaments

In phase 4, the percentage of individuals buried with some kind of bodily ornament (31.5%) is approximately the same as during phase 3 (29.4%). Waist and wrist ornaments (bronze bangle) are the more commonly occurring items, being both present in seven graves (19.6%). Jade ear disks are present in only two graves (2.7%). The two least common ornaments are the jade collared disk bangle and a beaded sash. Both are singular occurrences. As mentioned in chapter 6, the beaded sash consists of stone beads fashioned from presumably local and exotic materials (carnelian and agate).

Patterns of ornament covariation are again not apparent, as few ornaments regularly co-occur. As shown in Table 7.30, combinations of different ornament pairings are nearly all unique cases, with the exception of the bronze button, which appears to occur with bronze buckles in two assemblages. The only ornaments which never occur with waist ornaments are bronze bangles; there is in fact a nearly equal division between graves containing waist ornaments (7; 9.6%) and those with bronze bangles (6; 8.2%). Based on these distribution observations, ornaments are classified according to their decorative function though possible quantitative distinctions among wrist ornaments and neck ornament types will be considered.

Table 7.30: The distribution and co-occurrences of ornament types in phase 4.

	Buckle	Button	Jade Ear disk	Neck Orn	Bead Sash	Jade Bangle	Bronze Bangle	Total
Buckle	3 (4.1%)	2 (2.7%)	1 (1.4%)	0	0	0	0	6 (8.2%)
Button	2 (2.7%)	2 (2.7%)	0	1 (1.4%)	0	0	0	5 (6.8%)
Jade Eardisk	1 (1.4%)	0	0	0	0	0	0	2 (2.7%)
Neck Orn	0	1 (1.4%)	0	1 (1.4%)	0	0	0	2 (2.7%)
Bead Sash	0	0	1 (1.4%)	0	0	1 (1.4%)	0	2 (2.7%)
Jade Bangle	0	0	0	0	1 (1.4%)	0	0	1 (1.4%)
Bronze Bangle	0	0	0	0	0	0	6 (8.2%)	6 (8.2%)
Total	6 (8.2%)	5 (6.8%)	2 (2.7%)	2(2.7%)	1 (1.4%)	1 (1.4%)	6 (8.2%)	23 (31.5%)

The ornament categories can thus be summarized as:

1. Waist Ornaments: Buckle (3), Button (2), Buckle/Button (2) = 7 (9.6%)

2. Ear Orn: Jade Ear (2) = 2 (2.4%)
3. Wrist Ornament: Bronze Bangle (6), Jade Bangle (1) = 7 (9.6%)
4. Neck Orn: Bead (2), Sash (1) = 3 (4.1%)

Summary of Categories of Offering Types

Based on the patterns observed from the above analyses, Table 7.31 summarizes the range of offering types within each "functional" category. There are 12 distinct offering types responsible for the variation in grave offerings. The following section will explore variability within the configuration of grave assemblages to detect patterns of differentiation.

Table 7.31: Distribution of types within each functional category in phase 4.

Ceramics		Weaponry		Ornaments		Other	
One-vessel	8(11.0 %)	1-weapon	20 (27.4%)	Waist	7 (9.6%)	Bronze Armor	1 (1.4%)
Two-vessel	6 (8.2%)	Paired	5 (6.8%)	Ear	1 (1.4%)		
Three-vessel	2 (2.7%)	Paired + Armor	1 (1.4%)	Neck	2 (2.7%)		
				Wrist	6 (8.2%)		
				Waist + Ear/Neck	2 (2.7%)		
				Ear + Neck + Wrist	1 (1.4%)		
	16(21.9%)		26 (35.6%)		19 (26%)		1 (1.4%)

The configuration of grave assemblages

In phase 4, the majority of burials (72.6%) contain at least one grave offering. Three primary assemblage configurations characterize the variation in phase 3. The most common grave assemblage contains one category of grave good (45.2%). Two and 3-categories type offerings show a marked decrease in proportional representation suggesting that the material variation is likely organized along lines of increasing elaboration in the quantity of functional categories represented. In phase 4, the structural scaling of funerary elaboration sustains trends from phase 3.

Table 7.32. Distribution of grave assemblages in phase 4.

1-Category		2-Categories		3-Categories	
Ceramic	10 (13.7%)	Ceramic + Weapon	4 (5.5%)	Ceramic + Weapon + Ornament	3 (4.1%)
Weaponry	15 (20.5%)	Ceramic + Ornament	1 (1.4%)		
Ornament	8 (11%)	Weapon + Ornament	5 (6.8%)		
	33 (45.2%)		10 (13.7%)		3 (4.1%)

Within the 1-category assemblages, the majority of individuals with exclusively ceramic assemblages show a different compositional pattern from weaponry and ornament offerings. The expectation (as informed from previous patterns) suggests that categorically simple assemblages should also contain the most commonly occurring

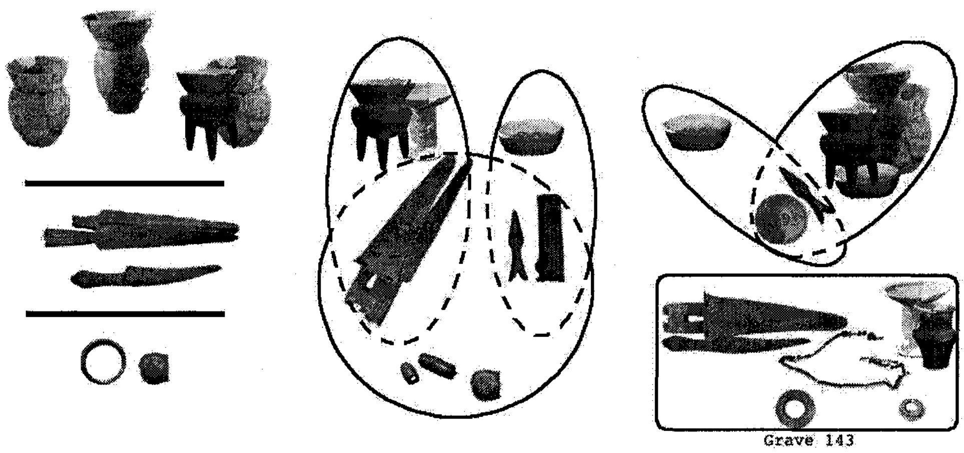


Figure 7.12. Increasing complexity in the configuration of assemblage types ranging from 1-category to 3-category type assemblages.

offering types. For example, one-vessel configurations would be preferentially distributed to graves with only 1-category type of offering. In phase 4, this expectation cannot be substantiated. Specifically, ceramic offerings are divided evenly between single vessel (5 graves) and two-vessel configurations (4 graves) consisting of a tripod and constricted jar and one individual with the complete set (Figure 7.12). In contrast, weaponry and ornaments appear to more closely approximate this cost model. Among graves containing weapons, 13 of the 15 individuals have a single implement mostly dominated by the knife while two individuals have the oddly paired weapon outfits. Of

the eight graves with ornament offerings, five burials have bronze bangle and three burials have a waist ornament.

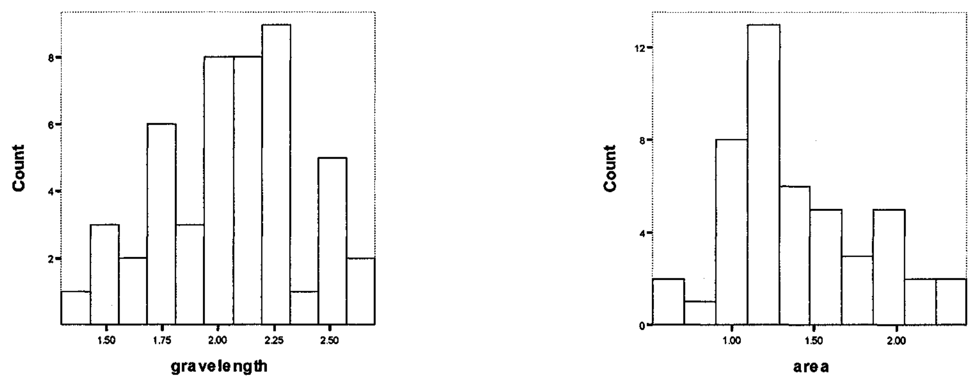
Within the 2-categories assemblages, the two primary configurations consist of weaponry with either ceramics (4 graves) or ornaments (5 graves). The weaponry implements consist primarily of the paired outfits (3 graves) and single implements consisting almost entirely of hafted implements: ax/chisel (4 graves) or spear (2 graves). In effect, there appears to be differentiation in the types of weapon implements constituting 2-categories assemblages versus 1-category assemblages, continuing a trend from phase 3. Ceramic additions include both one vessel and two-vessel configurations and associated ornaments are divided between a waist ornament (3 graves) and a neck ornament (2 graves).

It is within the 3-categories assemblages where the least commonly occurring artifacts appear suggesting formal differences in the nature of the material treatment. However, the patterns of material differentiation do not directly reflect the trends from the previous periods due to the absence of the "key" artifact types like of weaponry containers and oversized tripods. Two of the three individuals have a bronze spear implement and a waist ornament plus neck ornament. However, their ceramic offerings vary between a single vessel and a complete set, recalling the variability observed within the 1-category assemblage. This lack of association between the structure of ceramic configuration and the complexity of overall offerings suggests that different material treatments are associated with independent dimensions of the mortuary program. The third individual (grave M143) receives the greatest material elaboration. In addition to having a paired weaponry outfit, this individual is equipped with a bronze armor. Its exceptionally unique ornamental offerings (jade collared disk bangle, the beaded sash, and jade ear disk) in addition to the typical waist ornament further distinguish this individual apart (Figure 7.12). Finally, the ceramic contents also depart from other individuals in being uniquely configured with a pedestal plate and the painted shoulder jar to the exclusion of the conventional vessel forms. While the jade collared disk and bronze armor formally aligns this individual with previously assigned references of distinctions, the ceramic contents present a shifting practice.

Grave treatments

Grave length

The distribution of grave lengths shows three length groups defined by three modes (1.75m, 2.20m, and 2.50m) (figure 7.13a). While the average grave length remains consistent with patterns from previous periods (2.00 – 2.20 m), no grave is longer than 3.00 m. The absence of long graves contrasts with the preceding phases, where a small subset of individuals occupied tombs measuring more than 3.50 m in length.



Mean=2.05m Median 2.10m Mode 2.20m (22 missing)

Mean 1.40 m^2 median 1.26 m^2 mode 1.20 m^2

Figure 7.13 a and b. The distribution of grave lengths and grave sizes in phase 4.

Grave Size and Architecture

The contraction in grave lengths has reduced the range of grave sizes to just one distinct class (0.52 – 2.60 m^2). Compared to previous periods, graves in phase 4 are considerably smaller in size. Graves barely approach the medium size dimensions identified for phase 3. The median and mode values for phase 3 graves exceed those of phase 4 by 30 cm or more while the mean grave size in phase 3 is nearly 100 cm greater than phase 4. The decline in tomb size parallels similar transitions documented in the material treatment. As discussed in the "Configuration of Grave Assemblage" section for this phase, the qualitative markers (sword sheath and quiver) cycling through earlier phases are almost completely absent from phase 4 assemblage. In effect, the

disappearance of large graves may be associated with the "decommissioning" of these statuses.

This decline is also accompanied by the lack of evidence of tumulus structures from the mortuary program suggesting that ascriptive statuses may no longer receive ritual attentiveness. This overall decline in the level of effort invested in burial construction suggests that the mortuary program is transitioning rapidly such that the regularity of the funerary ritual cycling through the previous 600 years is no longer communally and socially supportable.

Patterns of differentiation by grave size and material treatment

Despite these shifts in the mortuary program, the complexity of the material assemblage continues to correspond to tomb size, suggesting that the two variables are interdependent (Table 7.33). Tomb sizes for the three individuals with 3-categories of offerings represent the largest in the assemblage, ranging from 2.11 to 2.43 m². One of these three individuals (grave 143) has the most unique and elaborate assemblage consisting of a bronze armor, unique ornament types (jade collared disk and the bead jaded sash), and the painted jar. In effect, certain qualitative distinctions as represented by the bronze armor and jade collared disk have not been taken out of circulation.

Table 7.33: Comparison of tomb sizes and grave assemblages in phase 4.

Tomb size	Offering categories				Total
	Empty	One	Two	Three	
< 1.00 m²	3 (4.1%)	0	0	0	3 (4.1%)
1.00 -2.60 m²	7 (9.6%)	26 (35.6%)	8 (11%)	3	44 (60.3%)
Total	10 (13.7%)	26 (35.6%)	8 (11%)	3 (4.1%)	47

Summary

In phase 4, the lack of differentiation in burial construction and decline in the circulation of certain qualitative symbols suggest a departure from the funerary marking observed in earlier periods. The majority of burials occupy earthen pit tombs with attenuated size variations. Even though burial size is related to material elaboration, the compositional nature of the most diverse assemblages do not evidence strong patterns of material differentiation, with the exception of grave 143. Missing from these

assemblages are the expected qualitative markers, such as the sword sheath, quiver, and oversized tripods.

Personal statuses appear to be largely structured by individual achievements. In particular, the configuration of bronze weaponry accompaniments continues to show internal differentiation between the different implement types. 1-category assemblages consist predominantly of single implements, such as the knife (n=9), blade (n=1), and sword (n=1) while the ax (n=4), spear (n=2), and paired weaponry (n=1) almost exclusively co-occur with ceramic and ornament offerings in 2-categories assemblages. In effect, this organizational division between implement types parallels existing trends from phase 3 and may represent an extension of the differentiated "martial" statuses.

In the absence of tumulus structures, the role of ascriptive structures in the configuration of social status cannot be directly substantiated. However, the circulation of the jade collared disk, despite the "waning" of all other distinctive markers, suggests that social ascription may still be important to status differentiation. In addition, cemetery membership persists to be an underlying principle in the funerary ritual.

PHASE 5 (120 BC - AD 80)

The last period of cemetery use is characterized by the introduction of Han object types across all three categories of mortuary goods. Overall, 63 (94.0%) burials contain at least one offering. Grave offerings again consist of three distinct functional categories: ceramics, bronze weaponry and ornaments, but the introduction of Han items has greatly increased the range of objects within each functional category. Forty-three object types are present in the phase 5 assemblage, showing a two-fold increase from previous phases. Artifacts with no antecedent counterparts are found across all categorical groups and their distributions range from singular to multiple occurrences. Interestingly, both the least (one bronze seal; 1.5%) and most frequently (Han coin [n=24], 32.9%) occurring object types are of Han origin while native object types across all categories show an overall decrease in frequency.

Material offerings

Ceramics and bronze food vessels

While existing ceramic vessel types remain in use, their use has declined such that fewer than five percent of the burials contain these vessel types. As shown in Table 7.34a, Han cooking vessels, in particular bronze cauldrons and pots, are more common (11 burials; 16.4%) than ceramic tripods (2 burials; 3.0%). Constricted jar types sustain existing forms, though the rate of occurrence is very low (3 burials; 4.5%). The basin is the only "new" ceramic type in the assemblage, associated with forms typical of the Han ceramic repertoire. The inversely proportional distribution of local ceramics to Han cooking vessels is interesting. Given that local wares are widely available, they should be more common than import wares. However, the high occurrence of Han cooking vessels may possibly indicate a preference for metal cooking pots. Of further interest is the co-occurrence of bronze cookeries and local ceramic vessels (jar, flared mouth jar and shoulder jar) suggesting substitutive trends in assemblage configuration. The exception to these Han cookeries is the unique occurrences of ornate bronze vessels (tall wine jar and footed basin), types that are associated with elite Han funerary offerings.

An examination of the upper half of the cross-tabulation Table 7.34a shows few regularly co-occurring types as evidenced by the predominance of 0 cell values and the singular cases of co-occurrence. In effect, most graves typically contain one vessel inclusion. Two trends producing stronger positive correlations is the association between tripod and pedestal plate, and between bronze cauldron and bronze pot. The two sets suggest two distinct configurations representing culturally exclusive assemblages: the first oriented around local vessels (n=1; 1.5%) and the second around Han cooking sets (n=3; 4.5%). They are classified as individual types. The rest of the assemblage comprises primarily of individual vessel offerings as mentioned above and of paired sets configured from a metal cooking vessel and a ceramic jar or cup or basin.

Table 7.34a: The distribution of ceramic, bronze and iron food vessels

	tripod	Jar	Flared Jar	Tall neck jar	Shoulder jar	cup	basin	pedestal plate	bronze cauldron	bronze pot	iron pot
Tripod	(2) 3.0%	1	0	1	0	0	0	1	0	0	0
Jar	**.388**	(3) 4.5%	1	0	0	0	0	0	1	1	0
Flared Jar	-.035	.305	(3) 4.5%	0	0	1	0	0	1	1	0
Tall neck jar	**.388**	-.043	-.043	(3) 4.5%	0	0	0	0	0	0	0
Shoulder jar	-.035	-.043	.305	-.043	(3) 4.5%	0	0	0	1	0	1
cup	-.038	-.047	.182	-.047	-.047	(4) 5.9%	0	0	0	0	1
basin	-.035	-.043	-.043	-.043	-.043	-.047	(3) 4.5%	1	1	0	0
pedestal plate	**.573**	.120	.120	**.455**	-.048	-.053	.120	(5) 7.5%	0	0	0
bronze cauldron	-.046	.217	-.056	-.056	.217	.298	-.056	.069	(5) 7.5%	3	0
bronze pot	-.050	.189	-.062	-.062	-.062	-.068	.189	.052	**.511**	(6) 9.0%	0
iron pot	-.035	-.043	-.043	-.043	-.043	.182	-.043	-.048	-.056	-.062	(3) 4.5%

Upper right half of table shows rate of occurrence while the bottom half shows the correlation coefficients for each pair of food vessel type.

Based on these trends in artifact distribution, the classificatory scheme is summarized below in Table 7.34b:

Table 7.34b: Distribution of food offering vessel configurations in phase 5.

One-vessel		Metal Cookery and Ceramic		Han Cookeries	Traditional sets
Jar	1(1.5%)	Metal pot + basin	1(1.5%)	3(4.5%)	1(1.5%)
Tripod	1(1.5%)				
Flared Jar	1(1.5%)	Metal pot +shoulder jar	1(1.5%)		
Shoulder jar	1(1.5%)	Metal pot + cup	1(1.5%)		
Tall neck jar	2(3.0%)				
Cup	1(1.5%)				
Basin	1(1.5%)				
Flared jar+cup	1(1.5%)				
Pedestal Plate + basin	1(1.5%)				
Metal pot	4(6.0%)				
Total	14 (20.89%)		3 (4.5%)	3 (4.5%)	1 (1.5%)

<u>Bronze and iron weapons</u>

Weaponry continues to be the most common type of grave offering with 34 (50.7%) graves containing at least one weapon. This distribution pattern marks a significant increase from previous phases. Native bronze weaponry types maintain the same proportional distribution as in the previous period. New Han weapons include an array of iron implements that are functionally equivalent to their bronze counterparts (sword, spear, knife, ax and chisel). Types without antecedent forms include horse trappings and the crossbow mechanism, which both have low rates of occurrence (n=2; 3.0%). The most widely circulated weaponry type is the Han iron knife (n=20; 29.9%); also common are iron carpentry implements such as the ax and chisel. The prevalence of iron knives is interestingly matched by a decrease in bronze counterparts (4.5% as compared to 12.3% in phase 4) and the complete disappearance of the bronze blade. The bronze spear, which first appeared in the assemblage during phase 4 (8.2% of total graves), also becomes more widely distributed in 19.4% of phase 5 grave.

The configuration of weaponry sets appears to be primarily divided between iron versus existing bronze implement types. Based on the correlation matrix in Table 7.35a, bronze sword, halberd, and spear are positively correlated with each other, while

negatively correlated with iron implements. Iron implements are all negatively correlated with bronze implements. This asymmetry suggests that weapon offerings are structured along dichotomous trends defined by different metals and also possibly cultural content. Because the correlation values are not strong,[3] it is likely that some graves contain implements that crosscut both metal forms. In effect, the upper half of Table 7.35a shows single cases where the bronze ax, spear, and knife co-occur with iron implements. For analytical convenience, the units of weaponry offerings consist of single implements, bronze arrow and iron ax/chisel, and the two qualitatively distinct types (paired outfits consisting of exclusively bronze or iron implements). These types and their rate of occurrence are shown in Table 7.35b. The one weapon type is the most widely distributed offering (19; 28.4%) while paired offerings are nearly equally divided between the bronze set (7; 10.4%) and the iron sets (8; 11.9%).

[3] The presence of burials containing only one implement also contributes to correlations with weak values.

Table 7.35a: The distribution of bronze and iron weaponry.

	Bronze						Iron			
	bronze sword	bronze halberd	bronze spear	Bronze arrow	bronze ax	bronze knife	iron spear	iron knife	iron ax	iron chisel
bronze sword	(5) 7.5%	4	4	0	1	0	0	0	0	0
bronze halberd	**.490**	(7) 10.4%	2	0	1	0	0	0	0	0
bronze spear	.374	**.522**	(13) 19.4%	0	1	0	1	0	1	0
bronze arrow	-.043	-.060	-.076	(3) 4.5%	0	0	0	0	1	1
bronze ax	-.048	.167	**.471**	-.038	(4) 6.0%	0	1	0	1	0
bronze knife	-.048	-.067	-.086	-.038	-.043	(3) 4.5%	1	1	0	0
iron spear	.264	.052	.053	-.060	.167	.167	(7) 10.4%	3	0	1
iron knife	-.122	-.170	-.142	-.073	-.108	-.014	.210	(20) 29.9%	1	1
iron ax	-.066	-.092	-.118	**.441**	-.059	-.059	.045	.239	(6) 9.0%	2
iron chisel	-.066	-.092	-.036	.195	.146	-.059	.321	.349	.400	(6) 9.0%

Upper right half of table shows rate of occurrence while the bottom half shows the correlation coefficients for bronze and iron weaponry.

Table 7.35b: Distribution of implement configurations in phase 5.

One Weapon		Paired Weapons	
Bronze knife	2 (3.0%)	Halberd+sword+spear	7 (10.4%)
Bronze spear	3 (4.5%)		
Bronze ax	1 (1.5%)	Iron knife+spear	3 (4.5%)
		Iron knife+ax/chisel	3 (4.5%)
Iron knife	13 (19.4%)	Iron ax/chisel + bronze arrow	2 (3.0%)
	19 (28.4%)		15 (22.4%)

Ornaments

Ornaments are also widely distributed in phase 5 burials, with 41 graves (61.2%) containing at least one ornament inclusion. In general, the ornament types maintain existing functional purposes used in adorning different anatomical parts of the body (waist, wrist, ear, and neck). The proportional increase of foreign artifact types relative to a decrease in local types also point to a possible substitution process. Bronze waist ornaments are present in 13.4% of the graves, while Han belt hooks are present in nearly thirty percent of the burials (Table 7.36a)! Bronze bangles, which first appeared at Batatai during phase 4, also become more widely distributed (22.4%) in comparison to 8.7% in phase 4. Similarly, the rate of occurrence for jade bangles also increases significantly from the previous phases, where typically fewer than two graves contained this offering type. However, only two bangles are of the collared disk type; the remaining bangles are single bands. The composition of the neck ornament is modified from previous phases in that other raw materials (turquoise, agate and carnelian) are used for beaded ornaments. Chapter 6 addresses in greater detail the differentiation of beaded inclusions into neck ornament and sash composite types. One sash, in particular, deserves further mention because of the unique nature of its bead composition. In particular, this sash (M41:4) is of unprecedented complexity in having the most beads (n=81) and the widest array of raw materials (carnelian, agate, amber, jade, and turquoise). Two beads depict anthropomorphized head and body (Figure 6.20).

The configuration of ornament offerings is generally consistent with previous patterns. Most ornament offerings consist of single objects (30 graves; 44.8%) as evidenced by the prevalence of low counts in the cross-tabular cells. The only ornaments never included as single inclusions are the bronze buckle and sash. The correlation coefficients are suggestive of internal divisions between native and Han ornament types. An examination of the three bronze waist ornament types shows that buckles and buttons tend to be negatively correlated with glass beads and neck ornaments. In contrast, the Han belt hook is positively correlated with those objects, though the association is only suggestive given the weak correlation values.

Table 7.36a: The distribution of ornaments.

	Waist			Wrist		Ear	Neck		
	buckle	button	Han belt hook	bronze bangle	jade bangle	jade ear disk	glass beads	neck orn	Sash
buckle	2 (3.0%)	0	0	1	1	0	0	0	0
Button	0	7 (10.4%)	1	1	0	2	0	0	0
Han belt hook	0	1	20 (29.9%)	0	1	1	2	2	0
bronze bangle	1	1	0	15 (22.4%)	1	0	0	0	3
jade bangle	1	0	1	1	6 (9.0%)	0	0	0	0
jade ear disk	0	2	1	0	0	7 (10.4%)	0	0	1
glass beads	0	0	2	0	0	0	3 (4.5%)	0	0
neck orn	0	0	2	0	0	0	0	10 (14.9%)	0
sash	0	0	0	3	0	1	0	0	4 (5.9%)

Table 7.36b: The distribution of ornament configurations in phase 5.

Single ornament		Combinations	
Button	3 (4.5%)	Waist + ear	3 (4.5%)
Han belt hook	13 (19.4%)		
Bronze bangle	5 (7.5%)	Wrist + sash	4 (6.0%)
Jade bangle	2 (3.0%)	Waist + wrist	4 (6.0%)
Neck ornament	4 (6.0%)		
Glass beads	1 (1.5%)		
Jade ear disk	2 (3.0%)		
	30 (44.8%)		11 (16.4%)

Based on the correlation matrix, ornament types that co-occur more regularly include waist ornament (button or belt hook) with jade ear disk *and* wrist ornament (bronze or jade bangle) with sash. While these combinations produced stronger correlation values, examination of the upper half of Table 7.36a shows that other ornament combinations are also possible. These other configurations are also considered as distinct category types and presented in Table 7.36b as representative of the variation in ornament distributions.

<u>New functional categories: commodities and luxuries</u>

Among Han imports, numerous types have no antecedent equivalents, suggesting the introduction of new functional categories. These objects are both frequently occurring (coins; 32.9%) and unique cases (bronze seal and Han bronze mirror). The contrast in proportional distribution between these two types is particularly revealing when contextualized within the imperial Han political economy. Specifically, coins and iron implements generally circulate in cross-regional trade as commodities, while bronze seals and mirrors are in theory tributary items facilitating diplomatic exchanges. The extremely low occurrence of mirrors and seal relative to the ubiquity of Han coins and iron implements seems to fit with these two different modes of transaction and consumption. According to a study by Liang (2004) on Han period burials from the Lake Dian necropoles, Han seals and mirrors are always placed in elite Dian culture tombs as a unit, supporting their symbolic and functional linkages. This spatial arrangement, which was also observed in the Batatai burial, departs from standard Han funerary practices (Liang 2004).

The bronze seal from Batatai is regarded as an enigma. The seal inscription, if read in the standard clockwise direction ("王铺汉印" *Wang pu han yin*), identifies the personal seal of an individual with the name *Wang* and surname *Puhan*. If read in the counterclockwise direction ("铺汉王印" *Pu han wang yin*), the seal identifies a person of high official rank. The actual identity of the seal holder is obscured by the physical quality of the seal: its size dimensions accord with personal seals but the use of the

tortoise embossment represents an official court rank.[4] Further complicating the seal's putative origins is the absence of textual accounts of this seal. Thus, while this seal may be of Han origin, it is not entirely clear if it is a court issued item.

Locally produced objects with single occurrences include lead ingots (n=2) and piece molds for casting bronzes (n=1). Lead ingots were introduced into the assemblage in phase 4. Piece-molds, however, appear for the first time in this final phase. This is a striking observation given that bronze has presumably played a central role in local production during the preceding 600 years but starts a decline in this phase.

Table 7.37. The distribution of individual types within each functional category in phase 5.

Ceramics		Weaponry		Ornaments	
One-vessel	14 (20.9%)	One weapon	19 (28.4%)	Single ornament	30 (44.8%)
Metal cookery + ceramic jar	3 (4.5%)	Paired weapon	15 (22.4%)	Combined Ornaments	11 (16.4%)
Han cookery	3 (4.5%)				
Traditional set	1 (1.5%)				
	21(31.3%)		34 (50.7%)		41(61.2%)

Configuration of grave assemblages

Given the wide array of offering types in phase 5, multivariate statistical procedures offered a more effective means for data screening. A cluster analysis (Ward algorithm) was conducted over the incidence matrix, which contained the presence/absence data for the categorical offering types identified in the distribution analysis. Tables 7.34b, 7.35b, and 7.36b show the full range of offering types over which I conducted the cluster analysis. In order to include types with singular occurrences, I aggregated certain objects into summary categories. More specifically, all ceramic occurrences were included as one-vessel ceramic types (see Table 7.34b).

[4] According to the source "Han jiu yi", the tortoise embossment is reserved for the higher rank. Individuals of this rank should also receive from the court a gold seal, as exemplified by the King of Dian seal from Shizaishan. Bronze seals are reserved for ranks below the zijun taishou according to the Hanshu chapter Baiguan biao (Liang 2004: 31-2).

The cluster analysis distinguished three primary clusters, labeled as A, B and C as shown in Figure 7.14. The presence of iron weaponry separated cluster B from cluster A. Cluster A is divided into two branches with cluster A^1 assemblages consisting mainly of burials without weapon inclusions (n=33; 49.3%) and cluster A^2 assemblages consisting of paired 'native' bronze weapon sets. Burials in cluster A1 contain offerings consisting of ornaments (waist, wrist and/or neck) and Han coins. Waist ornament types include both bronze buttons and Han belt hooks. Neck ornaments range from one jade bead to more elaborate sashes. Four individuals also have Han bronze cookery. Cluster A^{1ii} burials, in contrast, nearly all possess Han coins and some kind of serving set that is comprised of a mixture of 'native' complete and Han cookeries.

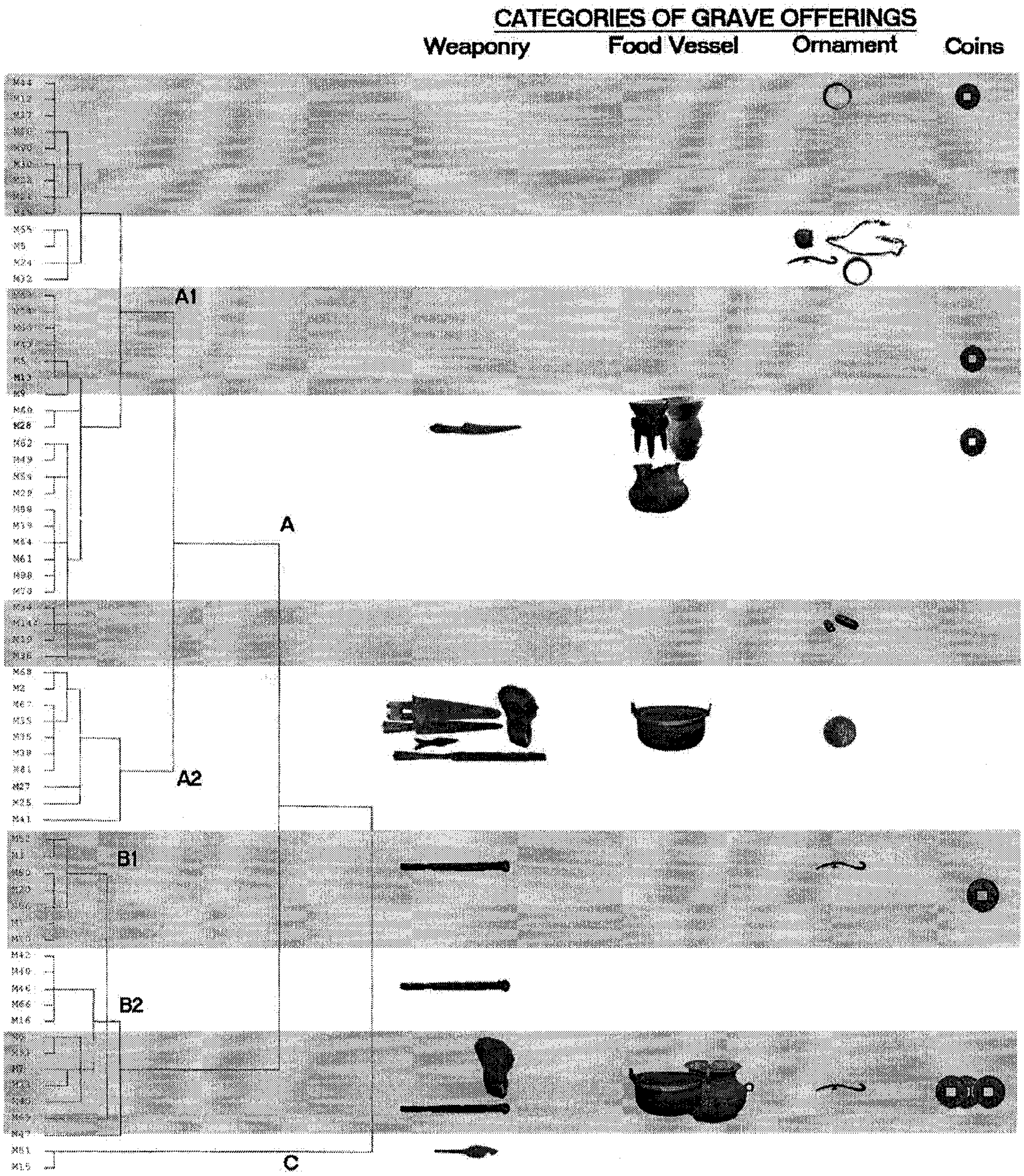


Figure 7.14. Dendrogram of phase 5 showing the grave assemblages constituting each cluster group. The alternating color bands show the individual cluster groups. Grave offerings are displayed from left to right based on the order of artifact categories.

Cluster A^2 and Cluster B show the clearest pattern of group differentiation through the contrastive nature of 'native' to Han material offerings. The bronze weaponry configurations found within cluster A^2 burials accord with the normative sets found in earlier periods: the paired bronze weapon outfits are exclusively found in this

cluster. In addition, bronze buckles and buttons are also preferentially distributed to these ten burials while Han belt buckles are completely absent. In contrast, cluster B burials only contain iron weaponry with possible waist ornaments (Han belt buckle) and Han coins. Within cluster B, the subgroups are largely divided by the increasing complexity of the iron implements (spear and ax/chisel). Five individuals within cluster B^2 also possess Han bronze cookery with grave 47 and 69 having the most diverse assemblages. While the cultural and metal material orientation of the grave offerings appear to formally differentiate these two clusters, it must be acknowledged that certain individuals have mixed sets of offerings, complicating the identification of distinct cultural categories in mortuary practices. For example, burials M27 and M28 in cluster A both contain 'native' weaponry types that are further supplemented by iron counterparts. Interestingly, of all the iron implements in circulation, the only item precluded from these "native" sets is the iron knife, the most commonly occurring iron weapon.

Within cluster B^2, a detailed examination of burial M69 assemblage further indicates that this 'native' versus Han material dichotomy is far from unequivocal. In addition to having the Han seal, mirror and the complete set of bronze Han serving ware, burial M69 also retains multiple 'native' artifacts. In addition to the bronze buckle and ceramic pedestal plate, this individual receives the iconic symbols of qualitative distinction (sword sheath, jade collared disk and lead ingots) and more interestingly, the piece mould for bronze casting. Furthermore, the grave layout recalls standard arrangements displayed in preceding periods (compare figures 7.6 and 7.15) where multiple sets of cookeries are stashed in the corner away from the body. Cluster C (n=2) is further distinguished by a weaponry set comprised of bronze arrows, iron axes and chisels.

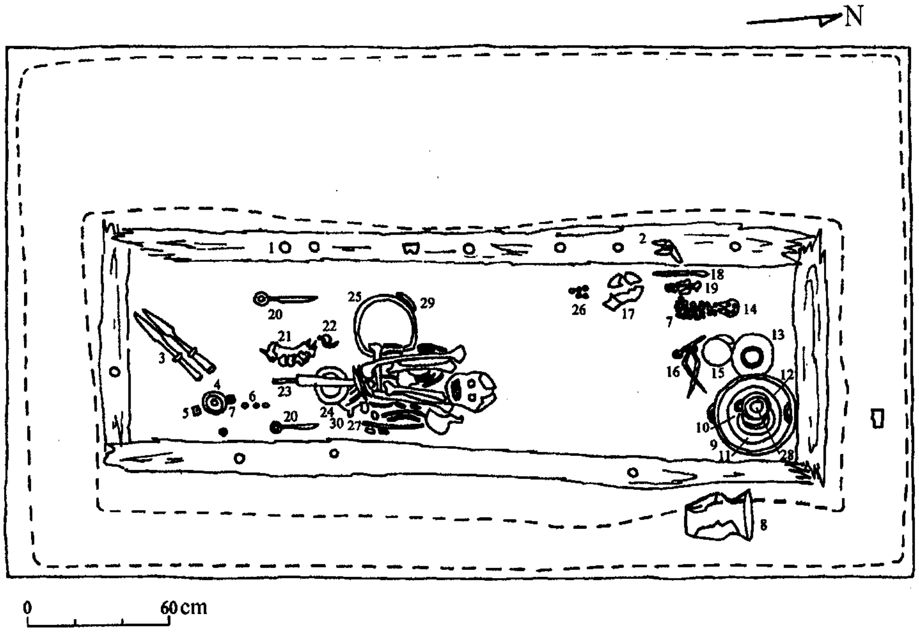


Figure 7.15. Plan view of burial M69. 1. Bronze button. 2. Bronze crossbow. 3. Bronze spear. 4. Bronze mirror. 5. Bronze seal. 6. Lead ingots. 7. Han coins. 8. Ceramic jar. 9, 10, 12. Bronze cauldron. 11. Bronze pot. 13. Bronze high neck bottle. 14. Bronze piece mould. 15. Lacquer plate. 16. Horse trappings. 17. Ceramic sherd. 18. Iron strip. 19. Bronze stamp. 20. Iron knife. 21. Bronze buckle. 22. Belt hook. 23. Jade collared disk bangle. 24. Iron sword. 25. Lacquer object. 26. Ceramic beads. 27. Iron belt hook. 28. Bronze object. 29. Lacquer cup?. 30. Bronze sword sheath.

Grave treatments

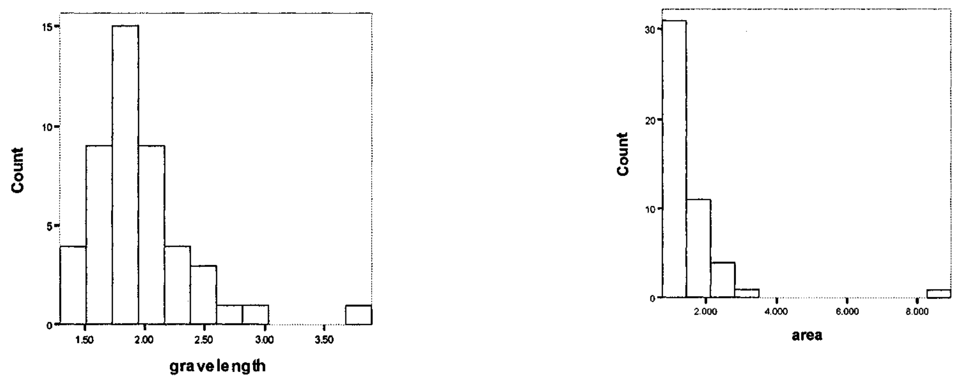
Grave lengths

The distribution of grave lengths shows primarily one main modal group (1.30 – 3.00 m) and an outlier (>3.50 m). These two grave lengths accord with patterns observed in phases 1-3 where the average grave length measures around 2.00 m in length. In addition, the previous phases also showed one to two individuals occupying a particularly elongated tomb plot. In continuing the trend from phase 4, graves show a progressive contraction in length. The mean and mode values for phase 5 graves are even lower than phase 4 (mean = 2.05 m, median = 2.10 m, mode = 2.20 m). Since it is unlikely that individual height has changed significantly between phases, this contraction in tomb dimensions may be associated with decreasing surface area toward the top of the mound.

Grave size and construction

The contraction in grave length across the group has contributed to smaller average grave sizes. In general, the average grave size is consistent with phase 4

distributions and smaller in dimension than phase 3 burials (mean = 2.31m², median = 1.61m², and mode = 1.58 m²). While the average grave decreases in



a. Mean 1.95 Median 1.85 Mode 2.00
25 missing, n=48

b. Mean 1.55 m² Median 1.26 m² Mode 1.26 m²
25 missing

Figure 7.16 a and b. Distribution of grave lengths and grave sizes in phase 5.

size, the largest grave has dimensions exceeding its earlier predecessors. Specifically, this grave (M69) measures 8.97 m², exceeding the largest graves from phase 1-3 by nearly 2.00 m². No tumulus structures are associated with any of the burials in phase 5. Grave M69 however is exceptional given that it is a secondary flexed burial placed inside a wooden plank coffin. In contrast to the typical pit tombs, a greater level of effort is required for secondary burial treatments due to an extended period of tomb maintenance and future labor coordination.

<u>Grave orientation</u>

As mentioned earlier in this chapter, grave orientations from phase 5 contrast from the normative east – west alignment found in the previous phases. Nearly all the graves have shifted to a north - south alignment, a practice that is consistent with Han mortuary customs. Only 15 graves (22.4%) continue to follow the 'native' east – west pattern. Grave orientations vary independently of grave lengths and sizes.

Patterns of differentiation by grave and material treatments

Given the apparent cultural divergence in weaponry offerings, grave orientation should logically correspond to the different material treatments. However, neither east – west nor north – south grave orientations are distinctly associated with iron or bronze

burial assemblages. Six burials from cluster A1 followed the Han pattern of grave orientation while six individuals from cluster B are oriented in the 'native' way; thus material treatments and grave orientations appear to be inverted in some instances. This observation is significant since, as discussed above, certain assemblages include a combination of both 'native' and Han objects.

In accordance with earlier periods, the complexity of the material assemblage continues to correspond with tomb length and size, suggesting the two variables are interrelated. The four shortest graves in phase 5 (<1.50 m) consist entirely of individuals without any grave inclusions in cluster A1. As shown in Table 7.38b, graves containing only the iron knife in B2 (n=5) are characterized by shorter graves that are below the median value (1.83 m). Cluster B2 graves containing iron ax or chisel and bronze cookeries occupy longer graves (>2.00 m). The two longest and larger graves consist of individuals with the most elaborate assemblages from the 'native' and 'Han' weaponry clusters. More specifically, grave 27 of cluster A2 measures 3.00 m in length and grave 69 from cluster B2 measures 3.90 m in length. Grave 27 is equipped with bronze armor in addition to paired bronze weapon set, iron counterparts, and a crossbow. Grave 69, as mentioned earlier, is the most elaborate tomb containing the other crossbow implement in the assemblage. Grave length thus appears to parallel the scale of complexity in the assemblage. The only exception to this pattern is the individual grave 41 in cluster A2, who occupies a short grave (1.62 m). Grave 41 is equipped with paired bronze weapons, an iron spear and unique ornaments (a jade collared disk and the anthropomorphic sash) (Figure 6.20).

Table 7.38a: The distribution of graves sizes for each cluster group.

Grave Size	Cluster A1	Cluster A^2	Cluster B^1	Cluster B^2	Cluster C
0 – 3.00 m^2	20	8	3	8	1
> 6.00 m^2	0	0	0	1	0

Table 7.38b: The distribution and variability of grave lengths within each cluster group.

Grave Length	Cluster A1	Cluster A^2	Cluster B^1	Cluster B^2	Cluster C
0 – 1.50 m	4	0	0	0	0
1.50 – 1.83 m	7	1	2	5	1
>1.83m	10	6	4	6	0

Additionally, among cluster B graves, the distribution of coins appears to be distinctly tied to assemblage elaboration. If coins represent a form of personal wealth, it is expected that only individuals with longer life histories or exceptional birthright would have accumulated greater economic resources. While coins are commonly occurring (32.9% of graves), they are not equally distributed across cluster B burials. Of all the burials containing an iron knife in cluster B, only individuals containing a waist ornament receive coin offerings. The probability of receiving quantitatively greater number of coins also increases among individuals who have an additional iron ax or spear (Figure 7.14). The iron knife, being the most basic implement type in circulation, appears to mark a default status. By extension, the exclusion of the iron knife from cluster A 'native' weapon assemblages may possibly reflect the intentional marking of social distance. It may not be entirely incidental that only iron spears, axes, and chisels are added to 'native' weapon sets.

In effect, the structural scaling between weaponry inclusions, grave length, and economic wealth parallels earlier trends and suggests that these statuses may represent personal achievements. If the probability of receiving a more complex weaponry assemblage and coins is much higher among grave lengths exceeding the median length, then the configuration of social status may be structurally bound to achievements made through life. This personal achievement also affords a degree of economic standing.

The only instance where grave treatment and economic distinctions converge in differentiating vertical status is in grave M69. The subset of grave referents marking high status is exclusively associated with this individual. In agreement with previous periods, grave M69 maintains the 'native' symbols of qualitative distinction such as the jade collared disk and sword sheath. Complementing the native markers of high status are Han referents of elite status (bronze seal, mirror and food vessels). The inclusion of the jade collared disk in grave M41, which has cycled through previous generations as an ascriptive marker, suggests that the genealogical basis of social organization remains relevant. However, as discussed earlier, this grave contains a smaller individual but with the exceptionally elaborate anthropomorphic sash ornament.

Summary

In the final phase of funerary ritual, the community at Batatai appears to have become more internally differentiated following the introduction of Han goods. Nearly half of the cemetery population contains strictly ornament based offerings with the inclusion of coins or food vessel. The remaining graves all contain weaponry based assemblages that are internally divided between 'native' bronze implements and Han 'iron' implements. As discussed earlier, these two dichotomous weapon sets are not entirely exclusive as certain graves incorporate implements of both cultural origins. The variability observed in these weaponry burials appears to be primarily differentiating between various personal achievements. As observed in the previous phase, the knife appears to be the most common and 'default' type of status marker. In an increasing order of material differentiation, individuals are further equipped with hafted implements (spears, axes, and chisels). Supporting these 'martial' distinctions is also the greater accumulation of economic resources (coins and commodities) introduced by the new imperial economy. However, those individuals associated with 'native' weapon assemblages do not appear to partake in that value system thus underlining bifurcating cultural identities. While these differences may be intentionally appropriated across this subset of the community, the apical individual attempts to integrate both "cultural" constructs in the configuration of high status. This distinct pattern of transliterating across Han and native symbols underscores more than anything else the higher stakes involved in sustaining political legitimacy and social authority.

SOCIAL ANALYSIS AT THE DIACHRONIC SCALE

Organization of social distinctions

The synchronic analysis showed that the Batatai community maintained a consistent social tradition from phase 1 to 3 (900 – 315 BC). During this lengthy duration, inclusion in the mound itself constituted the most significant component of the mortuary ritual. Most individuals simply occupied earthen pit graves oriented toward the east. The most apparent external marker of personhood is simply inclusion in the cemetery community and this unity is supported by the regularity in grave orientation shared across all burials. In effect, the mortuary ritual appears to foreground a dimension of personal identity that is distinctly aligned with locality and community. The

expression of this ethos is not surprising given the particular collectivized effort necessary for the conceptualization and construction of the cemetery mound.

The most obvious dimension contributing to social differentiation appears to be structured by personal achievements associated with individual life histories. In particular, this distinct configuration of social status is evidenced by the configuration of bronze implements that distinguishes between single implements, various types of paired weapon outfits, and specialized implements such as sword sheath and quiver. This particular scaling of bronze implement offerings corresponds with grave length. The complexity of the weaponry set is directly related to grave length with individuals receiving more complex sets showing a greater probability of occupying a tomb exceeding the median length. Within each phase, fewer than three individuals receive the bronze weapon containers and these 'rare' equipment sets only co-occur with paired or 'full' weapon offerings. These representations of differential 'martial' status occur continuously from phase 1 to 3 and become even more internally pronounced in phase 3 as the distributional scaling of weapon implements tends toward increasing segregation of single, paired, versus 'full' outfits.

These 'martial' statuses are also associated with economic distinctions. Specifically, the likelihood of receiving a complete ceramic set is almost a certainty with more complex weaponry offerings. The inclusion of a complete ceramic set, in contrast to single vessels, emphasizes sumptuary rules regarding staple offerings, underscoring the degree to which economic distinctions structure or order these graded statuses.

Vertical dimensions of status differentiation

While personal achievements present an important social vector for status differentiation, high status ultimately depends on ascription. The placement of tumuli over both small graves probably those of children with few indications of wealth and large and elaborate graves most likely those of adults marks an ascribed status unrelated to an individual's achievements in life. Within each phase, only one individual received exceptional grave and material treatments that far surpass all other burials. In addition to carrying the complete weaponry sets, the ceramic sets found in these graves emphasized staple resources beyond individual needs in the display of either one oversized tripods or multiple sets of the ceramic vessels. Beginning in phase 2, these individuals are also

distinguished with the jade collared disk bangle ornament, which as mentioned earlier are identified with elite individuals in the various iconographic depictions from the Dian region. These individuals (graves M279, 265, and 183) also occupied the anomalously long graves exceeding the average body height. In effect, only in these individual cases does grave construction clearly manifest substantially greater levels of effort requiring the wider contribution of labor from the community. This greater expenditure on mortuary ritual is evidenced by the construction of tumuli and a grave chamber that is more than three times larger than the average grave. The probability of occupying this elevated status is therefore based on the intersection of an individual's ascribed and achieved statuses. Underpinning this high status is greater political and economic influence in the community. Specifically, the exceptional offering of foodstuffs not only accords with the presumed wider participation in the mortuary ritual but also the reciprocity expected by the corporate members at the ritual event.

The transitional interlude before conquest

Beginning in phase 4 (315 – 120 BC), the mortuary program shows a community wide shift that departs from the strong social scaling observed in the earlier periods. The mortuary ritual does not evidence differentiation in burial construction and the circulation of qualitative symbols (bronze weaponry containers and multiple ceramic sets) is absent. This period, dating from 315-120 BC, interestingly also corresponds with political turmoil and increasing interstate warfare in the Central Plains. The most striking transformation to existing practices is the disappearance of tumuli burials and an overall decrease in grave size: no graves are larger than 3.00 m^2. Grave lengths also show one modal class. In addition, grave orientations switch from the normative easterly pattern to a mixture of orientations. Even the most elaborate grave (# 143) appears to receive more modest treatments in comparison to previous periods. Only the jade collared disk and bronze armor are sustained within this individual's assemblage. The "waning" of these symbols suggest possibly that the existing rank system may either not be communally supported or acknowledged within the funerary ritual. However, the organizational division between implement types parallels existing trends from phase 3 and suggests the continued importance of personal achievements in the differentiated 'martial' statuses.

Post-conquest structuration of cultural change

The most striking transformation of the conquest phase is the apparent widespread incorporation of Han materials into the mortuary assemblage. As mentioned earlier, Han coins, knifes, and belt hooks are the most widely circulated objects, and 30% of the burials contain at least one of these items. In effect, the burial assemblage appeared to broadly segregate into two 'cultural' groups: a 'native' assemblage consisting of bronze weaponry outfits and waist ornament such as the bronze buckle or button (19.4%) and a 'Han' assemblage comprised of coins, a knife and belt buckle (29.8%). Interestingly, the configurations of the two cultural treatments seem to follow a single structure: of weaponry and a waist ornament. However, a high proportion of burials (35.8%) contains mixed assemblages presenting a very heterogeneous pattern of artifact incorporation.

The most commonly occurring Han item is the coin, which is distributed in 32.9% of burials in a seemingly indiscriminate manner. Even the most simply furnished and small burials having only one object contain coins, suggesting that coins may be the most basic or default category of personal wealth and not necessarily a cultural identifier. Other commonly occurring Han items, such as the belt hook and iron knife, appear to be incorporated into 'mixed' assemblages on a substitutive basis. For example, burials with composite grave offerings can receive either a bronze button or a belt buckle. In effect, waist ornaments – regardless of cultural type– are considered functional counterparts. Within the 'mixed' burial assemblages, bronze weaponry is usually complemented by the same tool forms in iron. It thus appears that Han artifacts are adopted on an individual basis following both substitutive and additive or supplementary patterns of consumption.

This wide distribution of Han objects conforms to expectations of an imperial political economy. The production of iron implements, vessels and coins was controlled by the Han state through state monopolies and circulated as commodities in imperial trade. According to the "Debate on Salt and Iron", the Han attempted to restrict trade in iron goods with frontier enemies in order to sustain its economic leverage (Yu 1967:120-121).[5] The wider circulation of these objects following incorporation is suggestive of the

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[5] For a comprehensive discussion of the Han iron and salt industry, see Wagner (2001), The state and the iron industry in Han China, Leiden: Brill.

relaxation of trade relations. Thus, the availability of these products in turn makes them unlikely candidates for signifying distinctive cultural and status values.

Instead, these imports appear to have largely been appropriated to demonstrate differential statuses as scaled by personal achievements. The internal scaling of statuses is again substantiated by the divisions within the configuration of weaponry offerings. Specifically, individuals outfitted with a single iron knife are not buried with coins and waist ornaments. In addition, they tend to occupy shorter graves than the median length. Graves distinguished by additional iron implements (spear and ax) always have a waist ornament and a greater quantity of coin inclusions that suggests a degree of cumulative economic distinction. These graves are almost always longer than the median grave length. Contrary to patterns of acculturation, the process of Han artifact adoption appears to parallel structural configurations from earlier periods.

Among graves containing "native" weaponry outfits, this 'martial' status is crosscut by cultural affiliation. While the iron spear, ax, and crossbow are included in the 'native' weapon assemblages, ordinary implements like the iron knife are excluded. In addition, belt hooks and coins are completely excluded. The preferential segregation of the most commonly occurring Han objects is striking and suggests the intentional exclusion of Han commodities. In effect, these martial statuses appear to exact the cultural basis of social differentiation.

However, Han incorporation did have more than an attenuated impact on the nature of political authority. In particular, the 'apical' individual (M69) appeared to appropriate elements of Han elite practices as evidenced by the seal, a bronze mirror with Han inscriptions, and iron horse trappings. The bronze seal, with its tortoise embossment, is a sign that both indexes the Han sumptuary system and references the imperial association. However, given the small size and bronze material of this seal, it is not clear if this individual actually received official court recognition and appointment. In other words, the seal could have been locally manufactured for local status promotion.[6] Among M69's offerings is also a set of elite bronze sumptuary vessels consisting of a tall

[6] Other scholars have suggested that this seal may have functioned more as a mortuary good intended as a token of luck and auspicious expression rather than as a personal seal (Liang 2004:34). However, given the intentional adoption of the tortoise insignia and the use of wang or king in the inscription, I believe that the seal is very much a political token.

neck bottle, handled cup and cooking pots. These inclusions attest familiarity with Han elite mortuary practices, whose ritual intentions are to outfit individuals with their worldly possessions for the next life. This emphasis on individual persona marks an interesting contrast with the corporate nature of high status in previous periods. In fact, this burial – short of a brick burial chamber – appeals to metropolitan Han standards.

The emulative adoptions nevertheless are bound by certain societal and cultural constraints, which are resistant to change. For instance, burial M69 retains a sword sheath, a bronze buckle, lead ingots, and jade collared disk bangle. Even more striking is the inclusion of a bronze piece-mould even though bronze objects are on the decline. In addition, the placement of bronze pots and ceramic vessels resemble a similar locational position observed for M265 in phase 2. Perhaps certain symbols and practices – in particular relating to ascriptive status – cycle as cultural anchors that cannot be transgressed. The intentional nature of this manipulation is further evidenced by the secondary burial treatment accorded this individual. Specifically, the living caretakers or participants in this funerary ritual have not only ensured the proper return of this individual's body but also the proper inclusion of these specific offerings. In effect, the physical remains and these status symbols together serve as conceptual anchors to the past or alternately can be interpreted as offering "historical accountability" during a period of increasing intercultural entanglements (Rogers 2005:338-341). Thus, the cross-cultural configuration of this individual's burial treatment reflects a process of transcultural change where both sets of referents – however imperfectly appropriated – are simultaneously deployed to subscribe to an imperial Han order without forsaking 'local' recognition.

Chapter 8
Hengdalu Site

This chapter examines the social organization of the Hengdalu community by tracing developments within the mortuary ritual from 9^{th} – 1^{st} c. BC. As discussed in chapter 4, Hengdalu is a single burial mound located toward the southern boundary of the Qujing basin. The excavators uncovered 188 burials within an area measuring 1000 m^2, representing probably 25% of the total mound area. In this chapter, I first provide a reconstruction of the mortuary ritual for each chronological period at the site. Using the methodology outlined in chapter 5, I examine both the spatial and material patterns of variability to determine the vertical and horizontal dimensions structuring the mortuary ritual. As described in greater detail below, the structure of the Hengdalu site differs from Batatai in following a spatially distinct pattern of burial location and grave orientation. Finally, I compare and contrast diachronic patterns documenting changes over time in material treatment and spatial organization of the cemetery to consider the process of culture change at Hengdalu.

First, I discuss the basis for determining temporal and cultural units of analysis at Hengdalu by drawing on both stratigraphic and artifact distribution data. With the identification of the primary chronological periods, the analysis explores the sources of mortuary variability for each synchronic phase to reconstruct the vertical and horizontal dimensions underlying the mortuary ritual for each period. I then consider the cycling and divergence of these social principles across the different periods. In particular, I show how the Hengdalu community underwent periodic cycles of inter-group social competition within its local historical development without impacting fundamental horizontal structures. In the period immediately preceding conquest, the community experienced a significant shift in the orientation of mortuary traditions. The community inconsistently and differentially adopted new practices, producing a heterogeneous pattern of culture change.



Figure 8.1. The south side of the Hengdalu mound. The excavated section of the mound is to the left.

CHRONOLOGICAL ORDERING OF PHASES

The determination of chronological phases is based on the same approach adopted for the Batatai site. Specifically, correspondences between associated construction sequences (reported excavator's levels), depth below datum measurements for each burial, and occurrence of diagnostic artifact types will help to identify internal breaks within the mound sequence. In brief, if "shifts" converge across all three categories in the mortuary program, the identification of distinct chronological phases is strengthened.

Description of soil texture and color of each stratum

Burials at Hengdalu were deposited in six distinctive stratigraphic levels (numbered levels 1-6 in the excavators' report), with level 6 forming the earliest construction episode and each successive level being sequentially added on to the previous level (Figure 8.2). According to excavation notes, each level has continuous coverage over the entire extent of the burial mound, but there is a gap in the southern extent of the mound. More specifically, a steep natural rise at 65 degrees toward the southern end of the mound means that the same level did not consist of a flat surface but was marked by a difference of approximately three meters in depth. The excavators defined the six stratigraphic levels according to distinct soil color and texture.



Figure 8.2. N-S profile of western wall of excavated area. Level 6 consisted of a reddish tan soil. Level 5 consisted of a yellowish to reddish tan soil characterized by loose texture. Level 4 consisted of a mottled reddish tan soil. Level 3 consisted of a mottled yellowish to reddish tan soil that is loose in texture. Level 2 consisted of a yellowish soil and level 1 consisted of a mottled yellowish tan soil that is loose in texture. Not depicted are the topsoil and historic period burials which the excavators found stratified above level 1.

To determine if these construction levels should constitute the main analytical units, I examined the distribution of grave depths (distance between the top surface of the grave pit to the height of the datum point). Though these levels likely represent distinct construction sequences, the difficulties in distinguishing between levels, as the excavators noted in their field notes, suggest that these 'analytical' units need additional verification through grave depth. I assume that grave depths are associated with distinct mound surfaces or a cycle during which individual burials are interred before the next community-wide episode of mound maintenance through soil deposition. For both the northern and southern extent of the excavated area, the distribution of grave depths indicated five modal stratum groups (labeled 1 - 5 in Fig. 8.3a and b), in contrast to six defined levels.[1] While the modal stratum groups correlated with the sequence order of levels as shown in Fig. 8.4a and b, some stratums also contained burials from two different levels indicating that different excavators may have attributed burials of the same depth to different levels. As shown in Fig. 8.4a, graves identified by the excavators in levels 5 and 6 overlap in grave depths from 5.00 – 6.00 m below datum. In effect, none of the excavator levels correspond directly with the stratum groups identified in Fig. 8.3a and b. Since it is unlikely that burials from overlaying levels would have the same

[1] According to excavator's notes and personal communication with the primary investigator, water erosion and weathering of exposed surfaces in ancient times made the differentiation of these levels difficult. The final temporal units adopted by the excavators in their report consist of four primary phases that were aggregated from the six levels.

depth within the same spatial area, I argue burial depth is a better proximate indicator of stratigraphic order and also of the temporal units analyzed in this study.

North Extent	South Extent

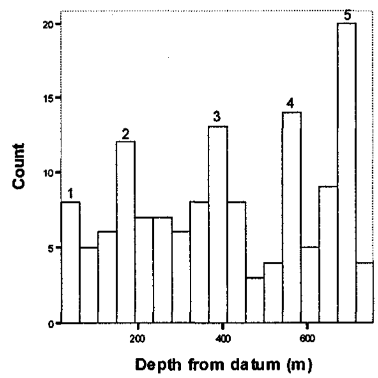


Fig.8.3a

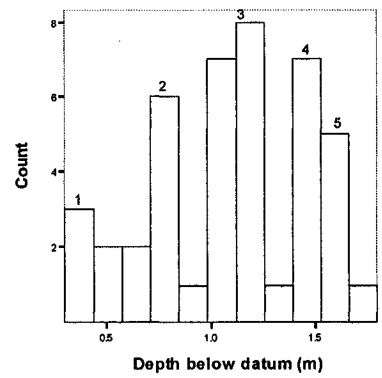


Fig.8.3b

Figures 8.3a and b (top row). Distribution of grave depths from the datum point. Figures show the depth below datum measurement distributions for the northern and southern extent of the Hengdalu mound and the 'depth' groups referred to in the study as stratum units.

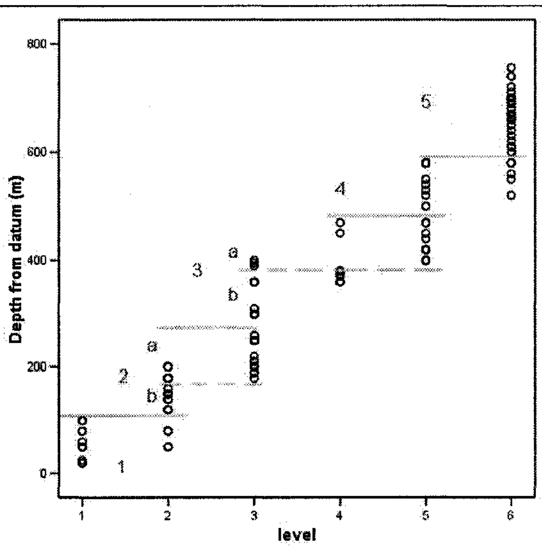


Fig 8.4a

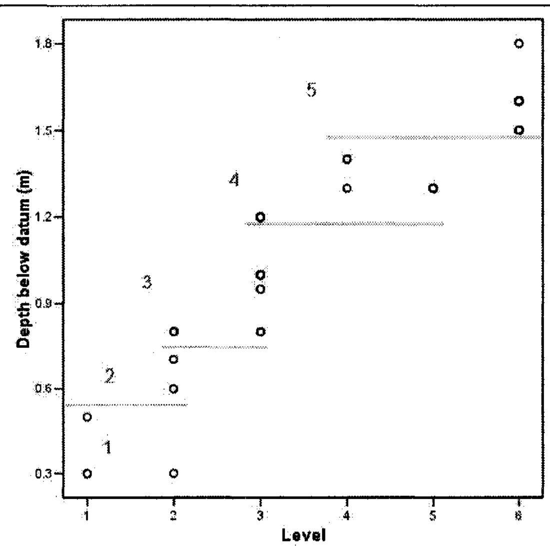


Fig 8.4b

Figures 8.4a and b (bottom row). Comparison of excavator levels to stratum units. Figures show the range of grave depths associated with burials belonging to each of the excavator levels. Numerals in light gray indicate the stratum modes identified in Fig. 8.3a and b and the solid lines indicate the modal boundaries for each modal stratum.

Below is a summary of the five stratigraphic units adapted for this study which I refer to as "stratum" to distinguish from the excavators' levels. The chronological dates are also summarized in Table 8.1.

Stratum 5. These graves all belong to the basal level and cut into sterile soil, suggesting that they belong to the initial phase of mortuary activity at Hengdalu. Grave depths range from 6.60 to 8.00 m bd (n=30) in the north and 1.50 –1.80 m bd (n=10) in the sloped southern section. One radiocarbon date from M108, which is located in the sloped southern section, yielded a range of 900-760 BC One TL date from burial M172 (UW 1450) produced a range 966±182 BC cal.

Stratum 4. These graves are stratified above and some even cut into stratum 5 burials. Grave depths range from 5.20 to 6.50 m bd (n=22) in the north and 1.20 – 1.50 m bd (n=15) in the sloped southern section. One TL date from burial M106 (UW 1449) yielded a range of 878±208 BC

Stratum 3a and 3b. Graves depths range from 3.60 - 5.00 m bd (n=34) in the northern extent and from 0.80-1.20 m bd (n=12) in the southern extent. The identification of two sequences is based on a distinct stratigraphic break within the stratum. According to the excavators, burials deeper than 4.0 m bd (n=21) in the northern extent of the cemetery are associated with level 5 soil deposits while graves stratified between 3.60 – 4.00 m bd (n=12) are associated with levels 3 and 4 (see figure). Beyond the discovery of the burials in superimposed positions, the excavators reported that the tomb chambers of burials deposited between 3.60 - 4.00 m bd cut directly into the tumulus type burials below, suggesting the interments were not contemporaneous events. Thus, the initial construction episode consisting of graves below 4.00 m bd is grouped into stratum 3a and the later episode consisting of graves above 4.00 m bd is grouped into stratum 3b.

Stratum 2a and 2b. Grave depths range from 1.20 to 3.00 m bd (n=32) in the northern extent and from 0.60-0.80 m bd in the southern extent (n=4). Burials tending toward 2.50 - 3.00 m bd (n=17) are associated with level 3 while those in the range of 1.20 - 1.80 m bd (n=15) are associated with level 2.

Stratum 1. These burials represent the last phase of construction and probably the latest period of Bronze Age mortuary ritual at Hengdalu. According to the excavation's co-PI, Liu Chengwu (personal communication 2007), historic period burials dating from the Yuan to Ming period (1271 – 1644 AD) were deposited above stratum 1, shielding the Bronze Age burials in stratum 1 from exposure and providing a temporal seal on the final phase of the cultural group under study. Han iron and bi-metallic implements were found

as stray finds in stratum 1 and not in association with excavated graves (2001:181-182). Grave depths range from 0 to 1.60 m bd in the northern extent and from 0.30 - .0.60 m bd in the southern extent.

Table 8.1: The depth measurements for each stratum and their estimated chronological span

Dates	Stratum Depths North Section	South Section	Associated Excavator Levels
150 – 109 BC	*1* 0 – 1.20 m bd	.30 - .60 m bd	1
380 – 150 BC	*2* 1.20 – 3.00 m bd Later 1.20 - 1.60 m bd Initial Below 1.80 m bd	.60 - .80 m bd	2 Batatai Phase 4 3
510 – 380 BC	*3* 3.60 – 5.00 m bd Later 3.70 – 4.00 m Initial Below 4.00 m	.80 – 1.20 m bd	3-4 5
690 – 510 BC	*4* 5.20 – 6.50 m bd	1.20 – 1.50 m bd	5 TL 878±208 BC 6
900–690 BC	*5* Below 6.60 m bd Above sterile	Below 1.50 m bd	6 TL 966±182 BC C14 900-690 BC

Distribution of grave goods across the strata

To verify the strength of these temporal stratums, I further compare artifact type distributions against the stratigraphic order. Following the same methods adopted for Batatai, morphological shifts in distinct types and the introduction of new artifacts are examined across the stratigraphic sequence to identify corresponding breaks. If the distribution of chronologically distinct types and variants corresponds with these stratigraphic units, then the separation of these strata into temporal units (or chronological phases) is further strengthened. Additionally, the comparison of these assemblage trends with Batatai allows for cross-dating between the two sites.

Of the ceramic types, Table 8.2 shows a change in the frequency of certain ceramic types between the different stratigraphic stratums. Among ceramic types, the round base tripod, jar and large flared mouth beaker, and plate are the mostly commonly

occurring items. These high occurrence types all decrease at a similar rate from stratum 5 to 1, from being present in over 25% of burials in stratum 5 to fewer than 10% in stratum 1. Flat base tripods emerge in stratum 4 burials and increase in frequency into stratum 2 burials. The decreasing frequency in common ceramic types is accompanied by the introduction of new vessel forms such as the tall neck jar and pedestal wares in stratum 3 burials and the shouldered jar in stratum 2 burials. The tall neck and shouldered jars in particular become the common liquid container vessels in stratum 2, being present in over 30% of the burial assemblages compared to the decreasing occurrence of flared mouth jars and jars. At Batatai, both tall neck and shouldered jars also emerge in the upper level burials belonging to phase 4 (360 – 180 BC) suggesting a temporal correspondence in assemblage trends between the two sites. Pedestal wares, which emerge in the Batatai assemblage in phase 3 (540 - 360 BC), appear at the Hengdalu site in stratum 3.

Within the ceramic assemblage from stratum 1, one tripod vessel (Cat. M54:2) fashioned with an arched handle has been singled out as being influenced by Central Plains styles. While arched handles are found on various Central Plains bronze vessel forms from the Zhou period into the Han period, the connection between the Hengdalu ceramic tripod and Central Plains bronze vessels remains unsubstantiated until intermediate forms in the bordering region are found.

Given the low occurrence rate among bronze weaponry types, the distribution indicates few clear chronological trends. Bronze weapons occur in less than 5% of the burials and ornaments also appear infrequently in the assemblage (see Table 8.3). Of the ornament types, jade discs and wood bangles are the most abundant but they appear only in 5.9% of the burials. The one suggestive change in the assemblage is the introduction of the bronze knife beginning in stratum 3 and a singular bronze spear in stratum 2, presenting trends that parallel observations at Batatai, where these bronze implements also appear for the first time in later stratigraphic deposits. At the Batatai site, bronze knife is introduced into the assemblage at phase 3 (540 – 360 BC) and the bronze spear at phase 4 (360-180 BC).

Table 8.2: The distribution of ceramic ware types across the sequential stratums. Cell values represent number of burials with item. Percentages represent cell value divided by the total column value

Stratum	Tripod			Flared Mouth Jar			Jars			Pedestaled		Plates
	Round Base	Flat Base	Large	Medium	Small	Jar	Globular	Tall neck	Shouldered	Plate	Jar	
1 (N=25)	5(4.7%)	5(11.9%)	6(5.9%)	0	6(9.8%)	7(9.2%)	2(14.2%)	2(15.4%)	8(61.5%)	2 (66.7%)	3 (33.3%)	12(13.5%)
2 (N=36)	1(0.9%)	4(9.5%)	3(3%)	0	1(1.6%)	1(1.3%)	0	0		0	0	2(2.2%)
2b(17)												
2a(15)	3(2.8%)	3(7.1%)	3(3%)	0	5(8.2%)	4(5.2%)	0	6(46.1%)	4(30.8%)	1(33.3%)	2(22.2%)	8(9.0%)
	5(4.7%)	8(19%)	6(5.9%)	1(3.6%)	9(14.8%)	5(6.6%)	1(7.1%)	2(15.4%)	1(7.7%)	0	2(22.2%)	10(11.2%)
3 (N=51)	5(4.7%)	4(9.5%)	5(5.0%)	0	3(4.9%)	5(6.6%)	3(4.2%)	0	0	0	0	5
3b(21)												
3a(18)	12(11.3%)	6(14.2%)	9(8.9%)	0	5(8.2%)	12(15.7%)	1(7.1%)	2(15.4%)			1(11.1%)	9(10.1%)
	16(15.1%)	4(9.5%)	11(10.9%)	3(10.7%)	8(13.1%)	7(9.2%)	1(7.1%)	1(7.7%)			1(11.1%)	15(16.8%)
4 (N=37)	28(26.4%)	8(19%)	32(31.7%)	11(39.3%)	11(18%)	17(22.3%)	4(2.8%)	0	0	0	0	14(15.7%)
5(N=39)	31(29.2%)	0	26(25.7%)	13(46.4%)	13(21.3%)	18(23.7%)	2(14.2%)	0	0	0	0	14(15.7%)
Total	106	42	101	28	61	76	14	13	13	3	9	89

Table 8.3: The distribution of bronze weaponry and ornament types across the sequential stratums

Stratum	Bronze Weaponry				Bronze Ornament				Other		
	Sword	Dagger	Spear	Knife	Buckle	Button	Bangle	Jade Disk	Wood Bangle	Whetstone	Gold pin
1 (N=25)	2(20%)	1(33.3%)	0	0	0	0	0	0	0	0	0
2 (N=36)	0	0	0	0	0	0	1(12.5%)	0	0	0	1
2b(17)											
2a(15)	0	1(33.3%)	0	1(50%)	1(33.3%)		1(12.5%)			1(25%)	
	2(20%)	0	1(100%)	0	0		2(25%)			1(25%)	
3 (N=51)	1(10%)	0	0	0	0	0	1(12.5%)	1(9.1%)	0	0	0
3b(21)											
3a(18)	1(10%)			0	0	0	1(12.5%)	1(9.1%)	1(9.1%)		
	2(20%)			1(50%)	1(33.3%)	1(25%)	1(12.5%)	1(9.1%)	1(9.1%)		
4 (N=36)	2(20%)	1(33.3%)	0	0	0	1(25%)	1(12.5%)	5(45.4%)	3(27.3%)	1(25%)	0
5 (N=40)	0		0	0	1(33.3%)	2(50%)	0	3(27.3%)	6(54.5%)	1(25%)	0
Total	10	3	1	2	3	4	8	11	11	4	1

Summary of chronological phases

The working chronology proposed for Hengdalu consists of five phases that span 900 to 109 BC (see Table 8.1). Stratum 5 burials span from 900 – 690 BC based on the radiocarbon date from burial M108. Assuming that subsequent cycles of burial deposition are of equal duration, I estimate that each phase also spans 180-200 years. Stratum 4 burials were deposited from 690 – 510 BC, stratum 3 from 510 - 330 BC, and stratum 2, which is roughly contemporaneous with phase 4 at Batatai (360 – 180 BC) given the corresponding pattern in artifact distribution, from 330 - 150 BC, a period immediately preceding Han conquest. As mentioned earlier, bimetallic and Han objects have been found in stratum 1 soil matrix but were not distinctly associated with stratum 1 burial context. Thus, a more conservative estimate for stratum 1 places the temporal range at an interval from 150 – 109 BC, prior to the date of Han conquest.[2]

Based on this sequential order presumably generated from discrete cycles of mortuary activity, each modal stratum group is defined as a unique chronological phase: *stratum 5 is defined as phase 1, stratum 4 as phase 2, stratum 3 as phase 3, stratum 2 as phase 4, and stratum 1 as phase 5.* As shown in Table 8.1, phases 1 – 4 are periods prior to any documented contact with the Central Plains states. Phase 5 anticipates the period of Han conquest and likely represented a period of growing intercultural engagement with the Central Plains states as indicated in the Han texts.

SOCIAL ANALYSIS AT THE SYNCHRONIC SCALE

This section presents the analysis of the horizontal and vertical dimensions of social variability within each phase. The mortuary program at Hengdalu is distinguished from Batatai in its unique internal cemetery layout. More specifically, the spatial pattern at the cemetery indicates intentional planning of grave locations within the mound. This practice contrasts with the nonspecific spatial layout at Batatai where burials appeared to be largely placed according to the availability of space. As such, the presentation of the Hengdalu data investigates the spatial and material dimensions independently before a consideration of how they might be interrelated.

[2] According to the published report, the excavators have dated stratum 1 to the W. Han period (206 BC – AD 6) (Yunnan Provincial Institute of Cultural Relics and Archaeology 2003:187). Because the Han items found in stratum 1 were stray finds, I am inclined to provide a more conservative date range.

The first order of analysis examines the spatial pattern of the cemetery plan. The analysis of horizontal structures relies on the presence of a non-random spatial distribution that shows discrete patterns of grouping or segregating individuals by space. In other words, the creation of spatial distance is assumed to be an active way for symbolizing group differentiation and an individual's membership. At the most basic level of perception, spatial location of graves would be visually apparent for each phase such that individuals would have an awareness of available versus occupied space in the cemetery. If the availability of space is the only criteria for grave location, then the community would place the individual anywhere, leading to a random pattern of distribution. However, if social affiliation is being represented at death, then the community would uphold a discrete pattern of space usage. The continuity of these patterns over time also carries implications about cross-generational transmission.

To examine the spatial distribution of burials within the mound, I conduct a two-step spatial analysis using ArcGIS 9.0 program and Crimestat 2.0 software. Maps of cemetery plots and individual graves are digitized into ArcGIS and set to a metric scale. A mean center point is then calculated for the individual grave rectangles using "mean center" under "spatial statistics tool" in ArcGIS: the center x-y coordinate point serving as the input value for the various spatial distance analyses to follow. Initial spatial screening consists of a nearest-neighbor analysis (NNA), provided under "distance analysis I" in Crimestat 2.0. The NNA provides an index value (NNI), which tests for spatial randomness.[3] If the NNI value indicates the presence of non-random patterning, a visual inspection of plan maps for each phase assists the identification of the spatial groups.

Following the procedure adopted for Batatai, grave lengths will be assessed as a possible indicator of biological age. Material treatments will be compared against grave lengths to assess for possible age related distinctions. Tomb architecture and grave size

[3] Nearest neighbor index (Nni) tests for "non-randomness" in the spatial distribution and is calculated as the ratio of the observed distance (Dobserved) / the expected distance (Drandom). Dobserved is the ∑distance between each point and its nearest neighbor / the total number of measured pairs.
The expected distance is the average distance between neighbors in a given distribution: 1/√total # of points/ total area). If the index is less than 1, the pattern exhibits clustering; if the index is greater than 1, the trend is toward dispersion. The Z score value is calculated to test for statistical significance and indicate whether or not to reject the null hypothesis, which states that the points are randomly distributed (Hammond and McCullagh 1978:270-75).

will alternately be compared to distinguish different degrees of energy expenditure that evidence increasing levels of corporate involvement. Then, I analyze the variability in material treatment and energy investment that may differentiate between social roles and statuses. Finally, the spatial distributions of these social distinctions are evaluated to determine if particular spatial units are distinguished by specific social identities and statuses. Equal versus preferential distribution of material distinctions to different social segments can imply different community organization patterns.

Phase 1 and 2 (900 – 510 BC)

Graves from phase 1 (n=38) and 2 (n=38) appear to follow the same spatial order characterized by placement in aligned parallel rows oriented along the east-west axis. Based on the nearest neighbor index (NNI) values shown in Table 8.4 (phase 1 at 0.82590 and phase 2 at 0.86479) are both statistically significant at the 0.05 level, suggesting that the spatial distribution of graves is possibly non-random.[4] Both synchronic periods also yielded similar observed and expected nearest neighbor distance values suggesting that inter-burial spacing followed similar guidelines. Based on a visual assessment of the cemetery plans, the source of spatial aggregation appears to be attributable to the arrangement of burials into aligned rows that are separated by empty zones (Fig.8.5 and 8.6). Phase 2 burials appear to continue the trend from phase 1 by adding members parallel or adjacent to the existing rows. This pattern is particularly striking for the southern quarter of the cemetery.

Table 8.4: NNI values for phase 1 and 2

	Observed Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index	P-value
Phase 1 (n=38)	1.2224	1.4801	0.82590	<.05
Phase 2 (n=38)	1.2752	1.4746	0.86479	<.05

[4] To test the strength of the Nni values for my sample, I subjected random sets of coordinate values within the range of each synchronic period to the nearest neighbor analysis. NNI values after many trial runs proved to be greater than 0.92 and the spatial patterning indicated randomness in the trial runs. The results of these tests are provided in appendix ?.

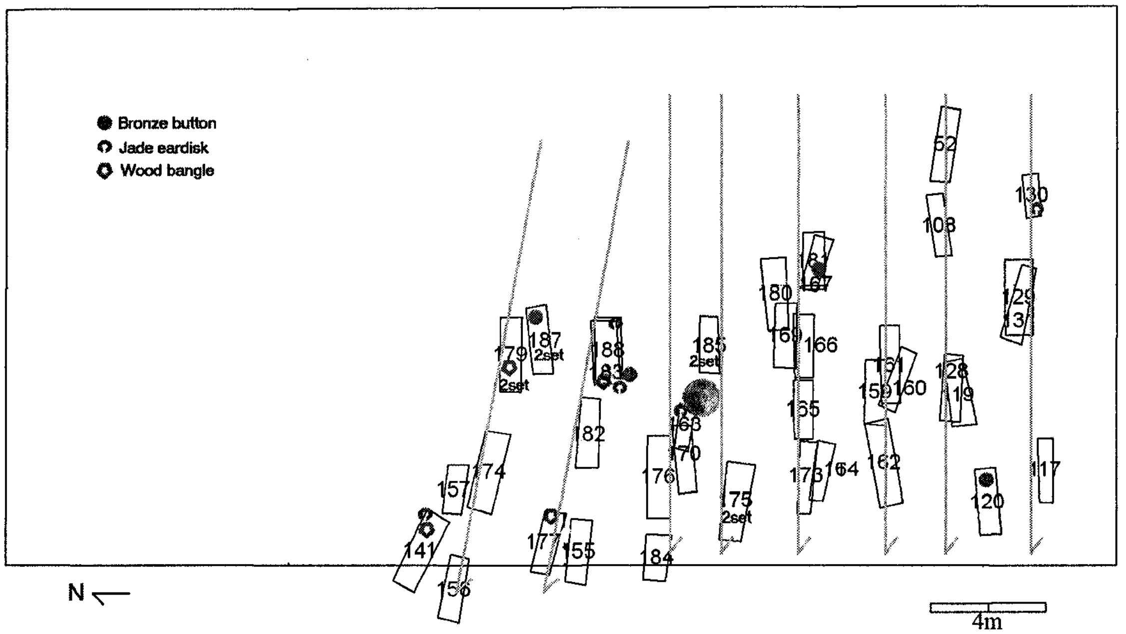


Figure 8.5. Plan view of phase 1 graves. Arrows in light gray show the direction of orientation of the rows.

Far from being an impressionistic observation, the visual perception of these aligned rows is further supported by the distinctive orientation shared by members of each row. In other words, the orientation of an individual grave is influenced by the grave orientation of the neighbor located in the same east-west row. Phase 1 graves are generally oriented towards 265 – 275°, with the mode and median at 270°. Burials in rows toward the southern extent of the cemetery follow this standard orientation with attenuated variations from 270°. Burials in the two rows toward the northern extent contrast in their orientation by shifting toward 280 - 290°. In particular, burials M187, 179, 174, 157, 141, and 156 located along the northern edge all follow this alternate orientation pattern, a visible differentiation from other individuals.

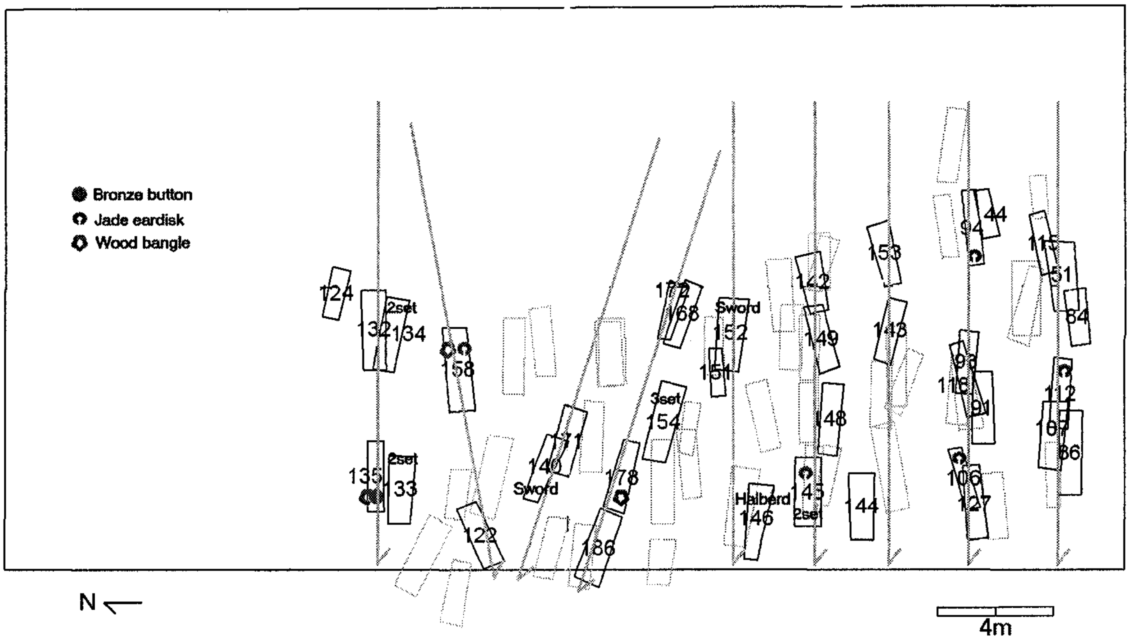


Figure 8.6. Plan view of phase 2 graves. Phase 1 (in light gray) below and phase 2 (in black).

Among phase 2 burials, the same grave orientation is followed by neighbors located in the same east-west rows. Half of all burials are again aligned along the same 265 – 275° with the exception of the two rows located in the midsection of the cemetery (M172 and M171). These graves are differentiated from burials to their north and south by an alternate grave orientation tending toward 285 – 295°. Adjacent rows to their north are further differentiated by a switch in grave orientation, 255° for the row containing M158 and the normative 270° for the row containing M132. That grave location and orientation together contribute to the visibility of these linear rows is symptomatic of intentional spatial planning whereby individuals are simultaneously being differentiated and grouped into physical and social units to mark affiliation. In effect, the discrete location of an individual's place in communal space represents the initial process in the proper treatment of the dead but also a community-wide attempt to internally differentiate its ancestors.

Patterns of material differentiation

Both phase 1 and 2 burials contain similar configurations of grave assemblages comprised primarily of ceramic vessels arranged into different functional type sets. Ceramic offerings range from one-type wares to two to three-type composite assemblages,

which are comprised of a tripod with either a restricted jar vessel or plate. The complexity of ceramic configurations does not directly correspond with a lower rate of occurrence in the burial group. As Tables 8.5a and b show, two-type vessel offerings are the most common grave offerings being present in over 50% of the graves in both phase 1 and 2. Although less common, three-type standard arrangements are still found in approximately 30% of the burials in both stratums. One-type arrangements are the least common type of ceramic offering present in only 18.4% of burials in phase 1 and 5.3% in phase 2. The redundancy of two and three-type ceramic sets as evidenced by their presence in nearly 80% grave assemblage suggests that they are the most basic or standard unit of material offering. The social significance of ceramic offerings may be quantitative in nature, a pattern reminiscent of the Batatai site. Four individuals in phase 1 and four individuals in phase 2 possessed at least two sets of the two- and three–type assemblages, which I refer to as 'provider' assemblages to distinguish them from the standard individual set. Among the tripods associated with phase 1 graves, one vessel (Cat. 162:4) is distinguished by larger proportions approaching the medium size class of tripods found at Batatai.

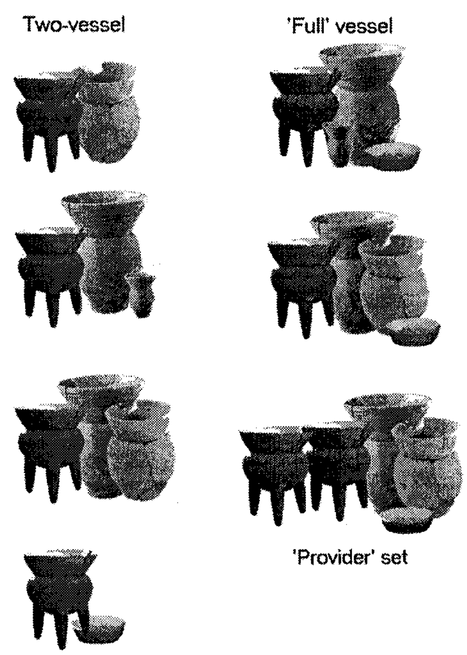


Figure 8.7. Two and 'Full' vessel ceramic sets.

Table 8.5a: The distribution of ceramic offering types and ornaments in phase 1

Phase 1 Ceramic Sets						Ornaments	
One-Vessel		Two-Vessel (Tripod + constricted vessel)		'Full'			
Tripod	2(5.3%)	Tripod+jar	4(10.5%)	Tripod+jar+plate	1(2.6%)	Wood Bangle	3(7.9%)
Jar	3(7.9%)	Tripod+FJar	5(13.1%)	Tripod+FJar+plate	8(21%)	BronzeButton	2(5.3%)
FJar	1(2.6%)	Tripod+Gjar	1(2.6%)	Tripod+jar+FJar+plate	4(10.5%)	BronzeBuckle + woodbangle	1(2.6%)
Plate		Tripod+jar+FJar	9(23.7%)			Jade Eardisk	
Jar+FJar	1(2.6%)	Tripod+plate	2(5.3%)			All	2(5.3%)
	7(18.4%)		21(55.3%)		13(34.2%)		

Fjar=Flared mouth jar and Gjar=Globular jar.

Table 8.5b: The distribution of ceramic offering types and ornaments in phase 2

Phase 2 Ceramic Sets						Weaponry and Ornaments	
One-Vessel		Two-Vessel (Tripod + constricted vessel)		'Full'			
Tripod	2(5.3%)	Tripod+jar	5(13.1%)	Tripod+jar+plate	2(5.3%)	Bronze Sword	2(5.3%)
Jar		Tripod+FJar	3(7.9%)	Tripod+FJar+plate	2(5.3%)	Bronze Halberd	1(2.6%)
FJar		Tripod+Gjar	1(2.6%)	Tripod+jar+FJar+plate	6(15.8%)	Wood Bangle	1(2.6%)
Plate		Tripod+jar+FJar	11(28.9%)	Tripod+jar+GJar+plate	1(2.6%)	Jade Eardisk	4(10.7%)
						Wood bangle + (Button or Jade)	2(5.3%)
Jar+FJar		Tripod+plate	1(2.6%)				
	2(5.3%)		21(55.3%)		11(28.9%)		10 (26.2%)

In contrast to the ubiquity of ceramic offerings, ornaments and bronze weaponry were two categories with low occurrence in the burial assemblage. All categories of ornaments and weaponry were present in fewer than eight burials in phase 1 and ten burials in phase 2 (Fig. 8.6). The most elaborate ornament offerings consist of a jade ear disk, waist button and wood bangles, which were found with burials M183 and M163 in phase 1.

The configuration of grave assemblages

All burials contain ceramic offerings, suggesting that the standard treatment provided for every individual consists of some kind of food offering. The categories of material treatment are broadly divided into four types: a one-vessel or two-vessel ceramic set, a 'full' set and a 'provider' type comprised of two or more serving vessel set, with the two-vessel arrangement being the most commonly occurring grave assemblage in phase 1 and 2. Elaboration in ceramic configuration does not appear to correspond uniquely with ornament types or bronze weaponry in phase 2. As shown in Table 8.6, jade disks, wood bangles and bronze buttons co-occur with both one and two vessel assemblages. Burials containing the full assortment of ornaments in phase 1 do not contain the provider assemblage. The lack of correspondence between these two categories of material offerings suggests that they may be marking different dimensions of the mortuary program.

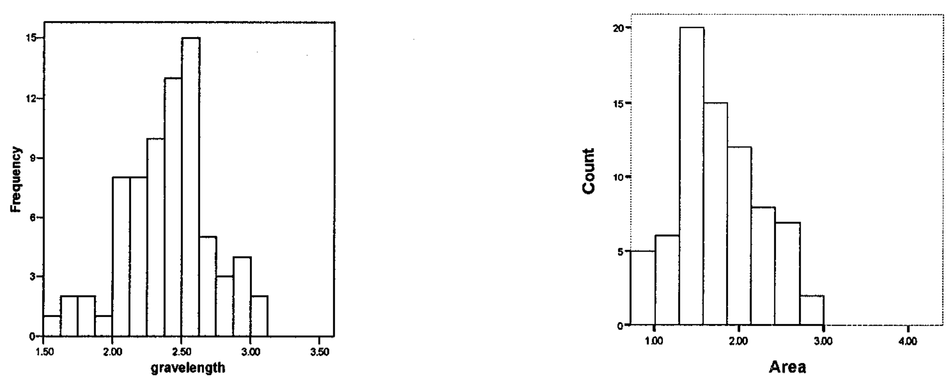
Table 8.6: Correlation between ornaments and different ceramic configurations

			Phase 1		
	Jade Disk	Wood Bangle	Bronze Button	Wood bangle + (Button or Jade disk)	All
One-Vessel		1	2		
Two-Vessel		1	1	2	
'Full' set			2		1
Provider		1			
			Phase 2		
	Jade Disk	Wood Bangle	Bronze Button	Wood bangle + (Button or Jade disk)	Bronze Weapon
One-Vessel					
Two-Vessel	3				1
'Full' set		1		2	1
Provider	1				

Grave construction and size

Following the procedure outlined in chapter 7, grave length will be assessed to determine possible age groups. The distribution of grave lengths for phase 1 and 2 shows a similar range in grave lengths observed for Batatai. As shown in Figure8.7a below, there are two modal groups: the primary group with a mean grave length around 2.50 m and a possible 'short' group with tomb pits less than 2.00 m in length. This trend recalls the negative skew observed in the distribution of grave lengths at Batatai.

While no tumulus structures are associated with phase 1 burials, the appearance of secondary ledge features in two phase 2 burials (M152 and M154) presented a grave treatment type possibly representing increased labor investment. The secondary ledge consists of a constructed shelf made of stamped earth surrounding the edge of the tomb chamber. The two burials with this feature have grave chambers measuring longer than 2.50 m. The distribution of grave size indicated weak evidence of differential energy expenditure across the two stratums. Figure 8.7 showed only one modal size group representing a standard range between 0 - 3.00 m².



N=75 Mean=2.39 m Median=2.40 m Mode=2.40 m

N=76 Mean 1.7502 m² Median 1.6820 m² Mode 1.32 m²

Figure 8.8a and b. Distribution of grave lengths and grave sizes in phase 1 and 2.

Comparison of material treatments against spatial location and grave treatments

An examination of material treatments and grave lengths do not indicate patterns of differentiation. Burials with greater ornament inclusions or provider assemblages occupy tombs in the primary length class during both phases. Though as mentioned earlier, the weaponry and secondary ledge burials tend to fall in the upper limit of the length class distribution. Interestingly, grave M163 in phase 1, which has a full array of

ornaments, including the only bronze animal buckle of that phase, and a full vessel set occupies a short tomb plot. All other short graves in phase 1 and 2 only contain ceramic offerings of the one and two-vessel configurations. If grave length can be taken as an indicator of age, then this individual may potentially be buried with greater material elaboration in recognition of particular ascriptive position within its social group.

The distribution of different composite offering types appeared to be spatially distinct across both stratums. In particular, burials containing two or more ceramic sets (the 'provider' type) are generally limited to two east-west rows located in the northern half of the cemetery (see Fig.8.5 and 8.6). In phase 1, these four burials consist of M187 and M179 located along the northern edge and M185 and M175 along the midsection of the cemetery. In phase 2, these four burials consist of M133 and M134 located along the northern edge, M154 in the midsection and M145. While these burials all occupy graves of variable sizes, burial M154, which contained a total of three sets and is distinguished by a secondary ledge tomb, occupies a larger grave pit (2.75 m^2). Grave size may be linked to the overall effects of ledge construction.

Among the non-ceramic inclusions, bronze weaponry appeared to correspond uniquely with the row located in the middle of the cemetery. Burial M152 contained the bronze sword while M146, its neighbor to the west, contained a bronze halberd. This row interestingly bisects the cemetery into two halves containing four rows. Ornaments however did not appear to be preferentially distributed to particular spatial units. No single row contains more than one burial interred with jade ear disks, wood bangles and bronze buttons. In other words, ornaments appear to be uniquely associated with certain individuals within each social segment but not preferentially with any one group.

Summary of the mortuary ritual from phase 1 - 2 (900 - 510 BC)

In general, the horizontal dimension exerts a strong influence on the organization of Hengdalu community as evidenced by the segregation of burials into spatial rows. In stratum 5, members belonging to different rows appear to receive the same range of mortuary treatments such that there is limited variability contrasting the different social segments. For instance, individuals are almost always buried with a 2-3 type ceramic set. The prevalence of this generic and standard practice suggests that all members, regardless

of individual identities and roles, are given this "base-line" treatment at death. The even distribution of bronze, wood, and jade ornaments to the spatial units also fails to show patterns of differentiation by social roles and positions. The only treatment suggestive of possible social elaboration and distinguished position in phase 1 is associated with the 'provider' ceramic sets, which are found in the burial assemblage of two distinct rows. However, it is not clear if this 'provider' assemblage distinguishes a ranked social position because it does not correspond with variables of greater energy expenditure. Thus, the mortuary patterns indicate that while individuals and social groups may have different productive capabilities, relationships between community members are not hierarchically ranked.

It is not until phase 2 (690 – 510 BC) that the internal differentiation of these groups becomes more apparent. While the Hengdalu community maintains the general spatial and material configurations from phase 1, the emergence of new tomb architecture and bronze weaponry suggests greater internal variability. Burials with this type of material and grave treatment appear to be spatially distinct in the cemetery, potentially marking a social distinction distinguishing two social segments and excluding others. The two segments are located adjacent to each other but defined by opposing grave orientations (see Fig. 8.6). This intentioned contrast intimates at both possible social disparities and competition between groups.

Phase 3 (510 – 330 BC)

This social competition and differentiation becomes even more intensified in phase 3 as the community invests greater levels of energy in burial treatment. As mentioned in the chronology section, graves from phase 3 divide into an initial construction sequence and a later episode. Beginning in the initial sequence, tumulus structure burials appear at Hengdalu, marking the adoption of new tomb architecture while secondary ledge tombs fall out of use. These tumulus burials (M123, M111 and M110) are all located in the northern half of the cemetery and are visibly distinguished by the capped earthen tumulus placed over the burial chamber (Fig. 8.8). While the symbolic meaning of the tumulus is not clear, the visibility of these constructed edifices on the surface of the cemetery likely served as spatial markers.

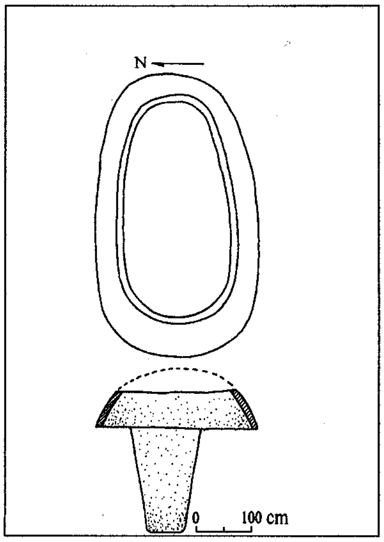


Figure 8.9 shows the plan and profile views of the tumulus structure associated with M123.

While burial distribution continues to accord with pre-existing east-west rows, the spatial order in the northern extent of the cemetery begins to depart from this normative alignment with the emergence of the tumulus burials. Most graves follow the expected consistency in grave orientation observed for each row with the exception of burials adjacent to M123. 57.06% of the graves are oriented between 260 – 275° and these graves tend to be located in the southern half of the cemetery. The remaining 42.94% of graves are oriented between 280 – 295° and consist mainly of burial rows in the midsection of the cemetery. Graves near burial M123 however do not follow a consistent orientation pattern and point in both directions (see Fig.8.9a). Contrary to the expected placement into aligned east-west rows, these graves instead form in branching pattern from M123. The nearest neighbor index (NNI) value of 0.78840 observed for the initial sequence listed in Table 8.7 suggests that the spatial distribution of graves tends toward a more clustered pattern than was found in phase 1 and 2.

Table 8.7: NNI values for initial and later sequences in phase 3

	Observed Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index	P-value
Initial (n=21)	1.1749	1.4902	0.78840	<.05
Later (n=30)	1.4872	1.4945	0.9951	Not significant

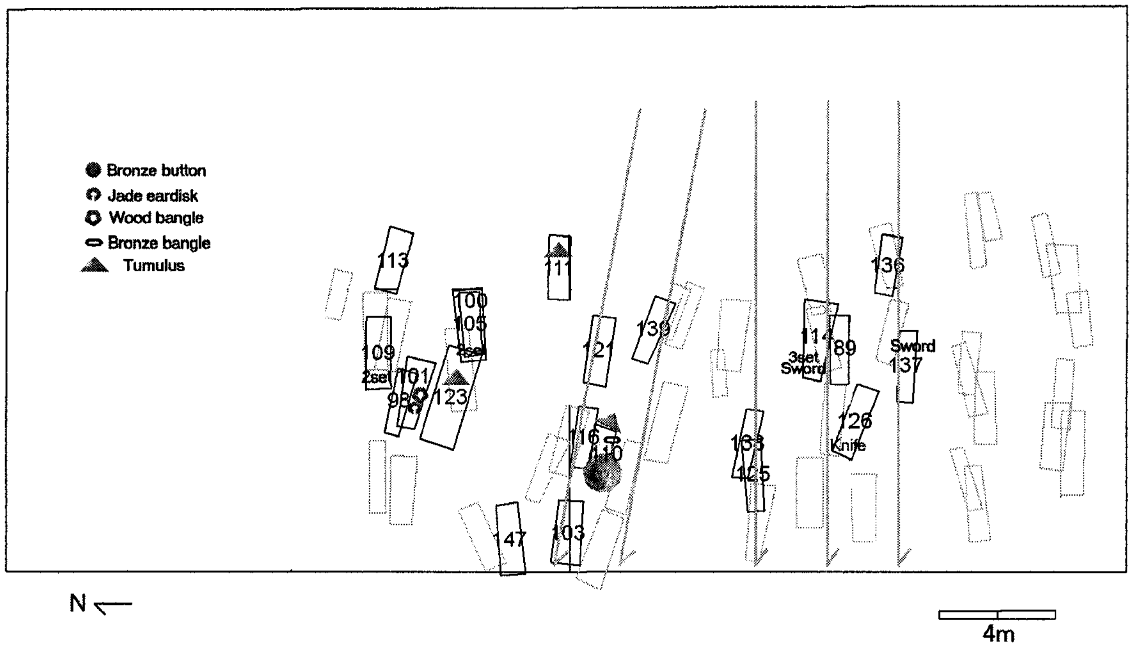


Figure 8.10a. Plan view of graves from initial sequence of phase 3.

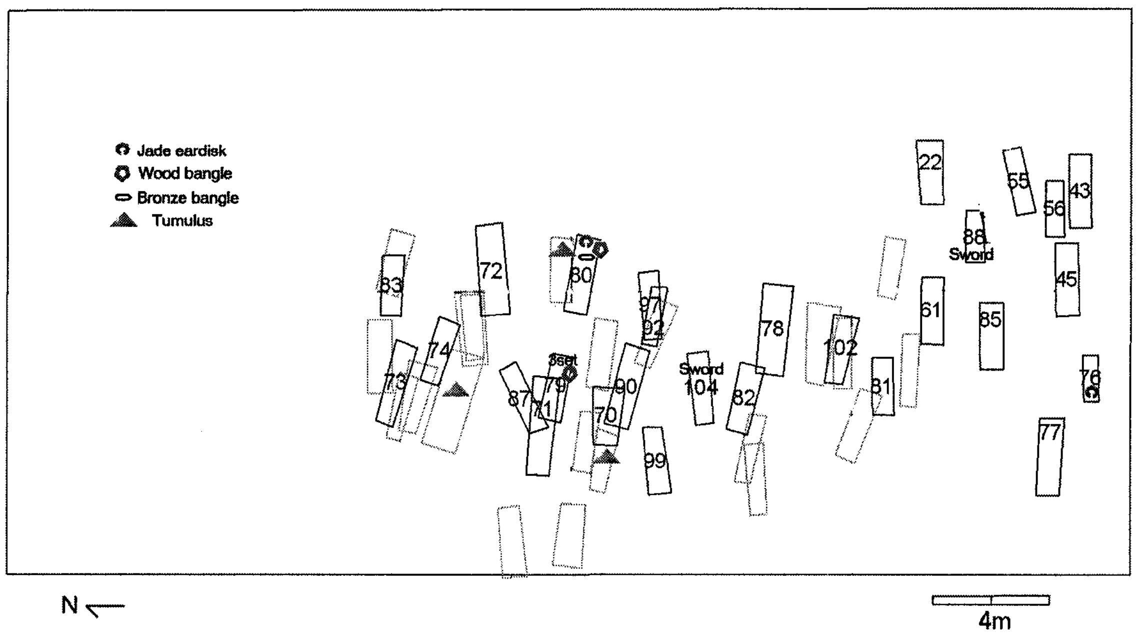


Figure 8.10b. Plan view of graves from the later sequence of phase 3.

This shift in the spatial order continues into the later sequence. New graves are placed along existing alignments and follow the expected grave orientation observed for each row. The exceptions to this pattern include burials in the vicinity of burial M123 along the northern edge and burials M99 and M104 in the midsection of the cemetery.

Burials M99 and M104 are not part of any visible rows. The high NNI value (0.9951) for the later sequence suggests that the spatial distribution tends toward random.

Patterns of material differentiation

While the spatial patterning departs from the previous two periods, the configuration of ceramic offerings maintains existing general trends. Two and three-vessel ceramic sets continue to represent the normative or basic unit of grave offering as evidenced by their occurrence in 88.2% of the burials (see Table 8.8). Further, the most common configuration sets continue to consist of the tripod, jar, and flared mouth jar set in the two-type arrangement (15.7%) and the tripod, jar, flared mouth jar and plate set in the three-type arrangement (31.4%). Within the two-type arrangement, new composite types lacking a tripod vessel appear in five (9.9%) of the burials belonging to the later sequence.

The primary source of variability in the ceramic assemblage is quantitative, tracking a trend that emerged in phase 2. Single or individualized sets are contrasted against more elaborate sets comprised of two to three vessels of each individual type. These 'provider' sets are distributed to five individuals in phase 3. Weaponry and ornament grave goods again are rare grave offering types distributed to fewer than 10% of the burial group, with most offerings being present in only one burial (see Table 8.8).

Configuration of grave assemblages

All burials continue to have ceramic offerings, suggesting that the standard treatment provided for every individual consists of some kind of food offering. The two-vessel arrangement and three-vessel arrangement occur in almost the same frequency, marking a contrast to phase 1 and 2. Elaboration in ceramic configuration, however, does not appear to correspond uniquely with ornament types. As shown in Table 8.9, jade disks, bronze bangles and bronze buttons co-occur with two and 'full' vessel assemblages.

Table 8.8: Distribution of ceramic assemblage types, weaponry and ornaments in phase 3

Phase 3 Ceramic Sets						Weaponry and Ornaments	
One-Vessel		Two-Vessel		'Full'			
Jar	1	Tripod+jar	7(13.7%)	Tripod+jar+plate	3(5.9%)	Bronze sword	3(7.9%)
Jar+FJar	1(2%)	Tripod+FJar		Tripod+FJar+plate	1(2%)	Bronze knife	1(2%)
Jar+Gjar	2(3.9%)	Tripod+Gjar	1(2%)	Tripod+jar+FJar+plate	16(31.4%)	Wood bangle	1(2%)
Jar+Tjar	1(2%)	Tripod+jar+FJar	8(15.7%)	Tripod+F&Gjars+plate	1(2%)	Jade ear disk	1(2%)
		Tripod+plate	2(3.9%)	Tripod+Tjar+Ped.jar	1(2%)	Wood + jade	1(2%)
		Plate+Jar	3(5.9%)			Wood + jade + bronze bangle	1(2%)
						Bronze buckle + bronze bangle	1(2%)
		Plate+Jar+F&Gjars	1(2%)				
		Jar+Tjar+Ped.Jar	1(2%)				
	5(9.8%)		23(45.1%)		22(43.1%)		9(17.7%)

Note: Fjar=Flared mouth jar; Gjar=Globular jar, Ped.jar=Pedestal jar.

However, bronze swords appear to more commonly co-occur with 'full' and provider sets, suggesting that these individuals may receive more distinguished treatments. In contrast, one-vessel assemblages never co-occur with ornaments and weapons.

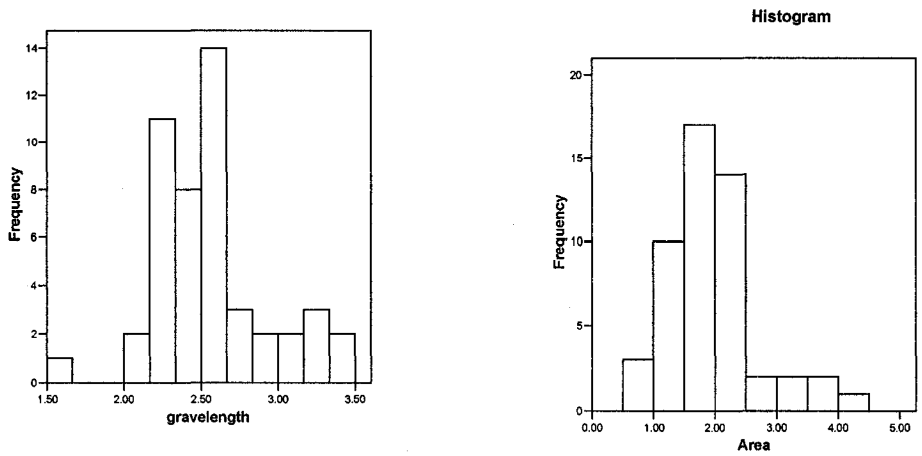
Table 8.9: The configuration of grave assemblages in phase 3

	Jade Disk	Bronze Bangle	Bronze Button	Bronze bangle + Wood bangle + jade	Bronze Weapon	Bronze sword + Bronze bangle
One-Vessel						
Two-Vessel				1	1	
'Full' set	1				2	1
Provider		1			1	

Grave construction and size

The distribution of grave lengths shows one short outlier grave, a central modal group characterized by average tomb lengths of 2.60 m, and five outlier graves with tomb lengths exceeding 3.00 m in length. These longer graves also account for the emergence of the right skew (> 3.00 m^2) in the grave size distribution. The distribution of grave sizes showed one primary size group ranging between 0.50 - 3.00 m^2 and five outliers exceeding 3.00 m^2 in area, recalling similar trends in large graves at Batatai (see Fig. 8.10). Grave length and size appear to correspond with tumulus constructions. Specifically, two of the outlier graves are associated with tumulus constructions, with grave M123 occupying the longest (3.40 m) and largest burial chamber at 4.42 m^2. The remaining three large burials are earthen pit tombs (M114, M72 and M80). In

comparison with phase 1 and 2, the distribution of grave sizes in phase 3 indicates stronger patterns of differential energy expenditure in tomb construction as evidenced by the creation of larger burial plots possibly to accommodate tumulus structures.



N=33 m Mean=2.53 m Median=2.60 m
Mode=2.60 m

N=51 Mean=1.96 m² Median=1.875 m²
Mode=1.38 m²

Figure 8.11a and b. Distribution of grave sizes in phase 3.

Comparison of material treatments against spatial location and grave treatments

Burial length and size loosely correspond with increasing elaboration in mortuary treatments. Individuals with greater elaboration in the range of material inclusions tend to occupy longer graves exceeding 3.00 m in length. Grave M114 contains a provider set and bronze sword and grave M80 receives a full array of ornament types. All graves containing bronze weaponry have tomb plots exceeding the mean grave length, suggesting that weaponry may potentially be marking a qualitative distinction based on achievement. Interestingly, the shortest outlier grave receives fairly elaborate material treatments ('full' vessel set and jade ear disks).

The distribution of different mortuary offerings appears to be spatially distinct, showing an internal division between graves in the northern and southern halves of the cemetery. Beginning with the initial interments in phase 3, graves containing bronze weapons (swords [M114 and M137]) and knife [M126]) are all located in the southern portion of the cemetery. This trend persists into the later sequence where only burials M88 and M104, the individuals with bronze swords, are located in the southern section of the cemetery. In contrast, no graves in the northern half of the cemetery, including the

tumulus burials, contain bronze weaponry. The individual tumulus burials, which are solely located in the northern section of the cemetery, are not distinctly associated with any one type of composite offering with the exception of burial M110. M110 contains bronze bangles and the only animal face bronze buckle that is similar to the type found at the Batatai site.

The 'provider' ceramic set occurs in burials that are either located in proximity to tumulus burials or to graves occupying large chambers. Three of the four burials with 'provider' type assemblages are in the vicinity of tumulus burials. Beginning in the initial sequence, the two burials (M105 and M109) containing two sets of the 'full' ceramic assemblage are both clustered around burial M123, the largest tumulus burial. An even more elaborate set consisting of three ceramic sets are found with burials M114 in the initial sequence and M79 in the later sequence. Burial M79 appears to be aligned along the same row group as the tumulus burial M111. Burial M114, in addition to having a bronze sword, occupies a large burial chamber in the southern section of the cemetery.

Summary of the mortuary ritual from phase 3 (510 – 380 BC)

While horizontal principles of social affiliation continue to structure the mortuary ritual, an increasing complexity in the mortuary ritual suggests the formation of social differentiation. First, the emergence of tumulus burials requiring greater labor investment suggests that some individuals may have held distinguished positions with corporate support or influence. Two of these tumulus burials also occupy larger tomb chambers, while one individual is additionally marked by bronze bangles and a bronze animal buckle. Grave M114, though without a tumulus structure, also occupies a large burial chamber and is distinguished by a three-set 'provider' assemblage in addition to a bronze sword. Individuals with bronze weaponry are likely to receive a more comprehensive set of food offerings as evidenced by the presence of a 'full' ceramic set. However, these individuals do not receive distinguished grave treatments.

The treatment accorded these individuals further points to the increasing internal differentiation emerging between respective social groups. While individual identity continues to be strongly associated with distinct social groups as evidenced by the communal recognition of spatial rows, the preferential distribution of 'provider' ceramic

assemblages to specific groups suggest differential access to resources between social groups. Specifically, the 'provider' ceramic assemblage tends to be preferentially distributed to graves located in the vicinity of tumulus burials. Individuals affiliated by spatial proximity to tumulus burials are the only recipients of 'provider' assemblages. This spatial patterning intimates at the potential significance of "associative" status. In particular, the clustering of graves around burial M123 suggests that individuals commanding greater corporate influence may have been able to attract more followers. In contrast to the normative burial pattern, the burials clustered around burial M123 tend both to depart from spatial alignments and lack consistent grave orientation. This irregularity may also suggest that existing horizontal dimensions may be subject to the growing influence of individuals. Thus, it is possible that social competition exists between groups of individuals but no formal system of ranking can be substantiated.

Phase 4 (330 – 180 BC)

Following phase 3, mortuary practices at Hengdalu begin to show a community wide shift that is most notably evidenced by the loosening of principles underlying burial location. As mentioned in the chronology section, graves from phase 4 divide into an initial construction sequence and a later episode. Beginning in the initial sequence, use of the western extent of cemetery is discontinued such that no new members are buried in this densely packed section of the cemetery. Instead, individual graves are moved toward the eastern and northwestern extent of the cemetery, opening up formerly unoccupied areas. Along with this expansion of burial space, new burials do not appear to segregate into spatially discrete ordered rows but are inclined toward a random distributional pattern. Graves are placed according to the availability of space such that there does not appear to be any regularity in inter-burial spacing. While the NNI values neither strongly support or dispute patterns of clustering or randomness, they do suggest the generation of "noise" from the initial to later portion of the sequence. Table 8.10 shows an increase in NNI from 0.7907 in the initial to 1.16461 in the later sequence.

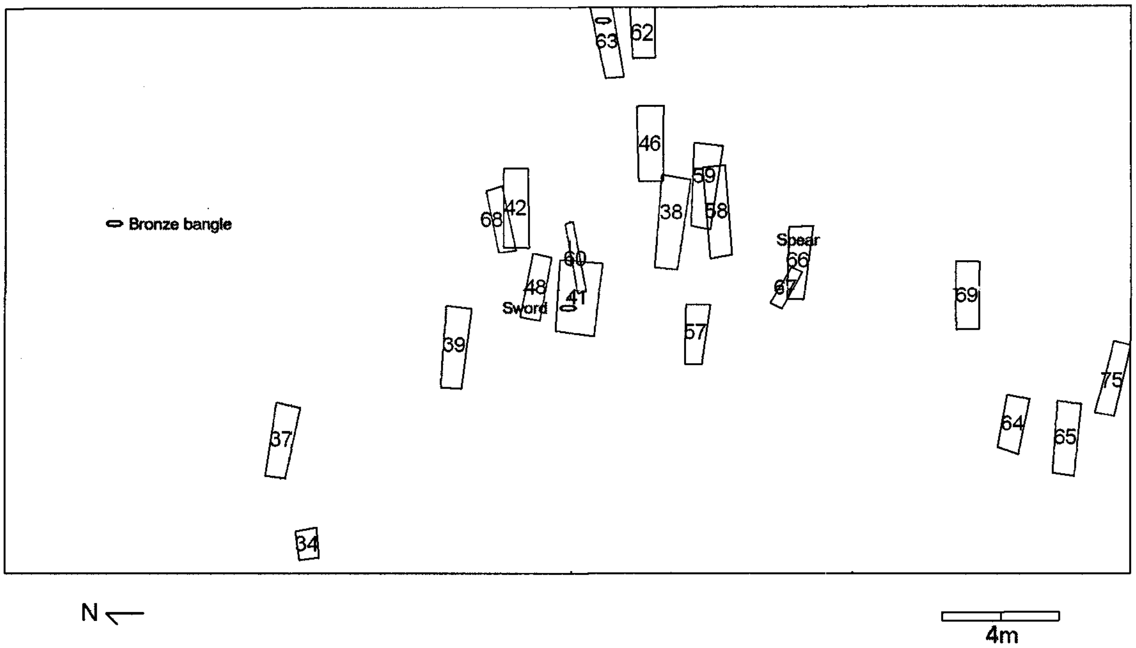


Figure 8.12a. Plan view of graves in the initial sequence of phase 4.

Table 8.10: NNI values for phase 4 sequences

Construction sequence	Observed Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index	P-value
Initial (n=21)	1.8674	2.3618	.7907	<0.1
Later (n=15)	2.5737	2.210	1.16461	Not significant

This transformation in the internal structure of the cemetery is also evidenced by shifts in grave orientation in the later sequence of phase 4. Most graves in the initial sequence are oriented toward either 260-275° or 280-295°, which are consistent with earlier practices. However, 22.22% of burials categorized under "other" orientation group are oriented between 210-250° (see Fig.8.11b). Graves that follow this new orientation trend emerge in the later sequence into the final phase of cemetery use. A shift in the "blueprint" of Hengdalu cemetery organization carries multiple implications. The spatial engineering involved in earlier cycles of mortuary ritual underscored the role of community planning within collectively recognized parameters. Departure from this tradition suggests wider societal changes affecting either horizontal principles of affiliation or, possibly, the role of mortuary rites in social practice.

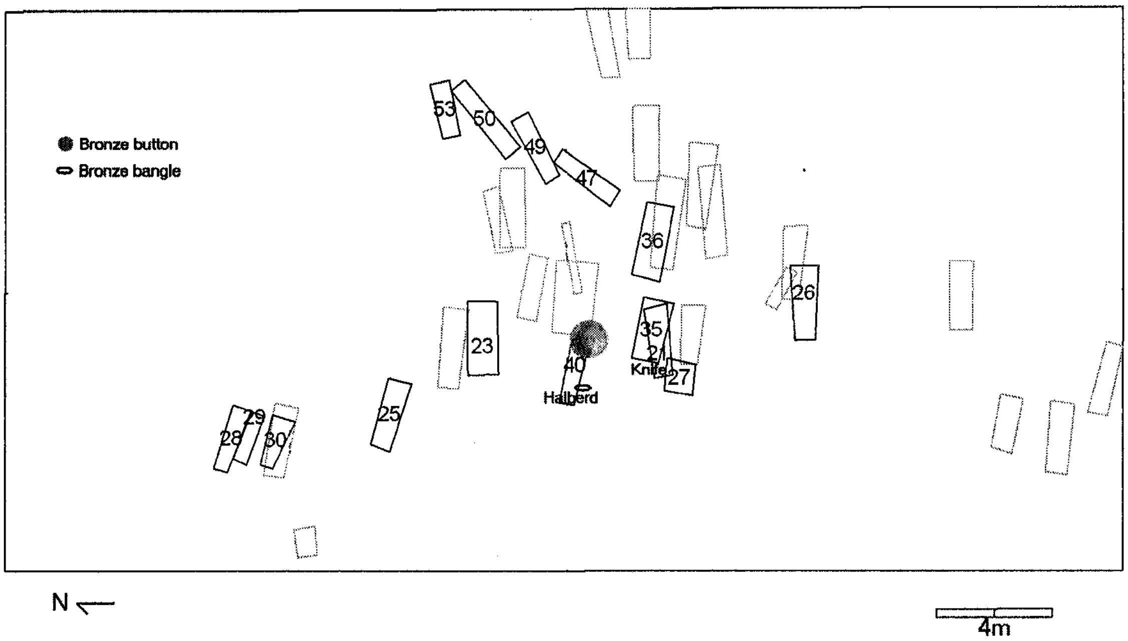


Figure 8.12b Plan view of graves in the later sequence of phase 4.

Patterns of material differentiation

Corresponding with a shift in the spatial order, the configuration of burial offerings also changes significantly in phase 4, as new ceramic vessel types begin to be substituted for older wares in the 'full' ceramic offering sets. As mentioned earlier, these new vessel types include the tall neck jar, shouldered jar, and the pedestal jar and plate. These new ware types are incorporated into the ceramic assemblage in two distinct patterns. They are either additions or substitutions into existing two and three-vessel type ceramic assemblages or they present a new composite set comprised exclusively of new ware types. For example, tall neck and shouldered jars co-occur with a tripod in conformity with the tripod and container arrangement (see Table 8.11). In contrast, the new composite type consists entirely of pedestal type wares, tall neck and shouldered jars.

Table 8.11: The distribution of ceramic assemblage types in phase 4

Phase 4 Ceramic Sets							
One-vessel		Two-vessel		'Full'		New	
Tripod	1(2.8%)	Tripod+jar	3(8.3%)	Tripod+jar+plate	2(5.6%)	T&Sjar+Ped.plate	1 (2.8%)
Jar	1(2.8%)	Tripod+FJar		Tripod+jar+Tjar+plate	1(2.8%)	Jar+T&Sjar+Ped.jar+plate	1(2.8%)
FJar	2(5.6%)	Tripod+Sjar	1	Tripod+jar+Fjar+Ped.jar	1(2.8%)	+ Ped.Plate	1(2.8%)
Plate	3(8.3%)	Tripod+jar+FJar	4(11.1%)	Tripod+jar+Fjar+Tjar+ Ped.jar+Plate	1(2.8%)		
Jar+FJar	1(2.8%)	Tripod+jar+F&Gjars	2(5.6%)				
		Tripod+plate	1(2.8%)				
		Plate+Jar	1(2.8%)				
		Plate+FJar	4(11.1%)				
		Plate+TJar	2(5.6%)				
		Plate+F&Tjars	1(2.8%)				
	8(22.2%)		17(47.2%)		5(13.9%)		3(8.3%)

Note: T=Tall neck jar, Sjar=Shouldered jar, Ped.plate=Pedestal plate, and Ped.jar=Pedestal jar.

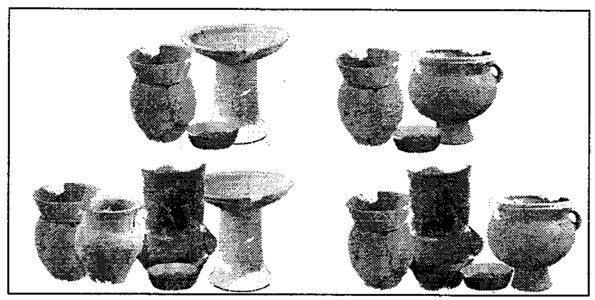


Figure 8.13. 'New' ceramic sets associated with phase 4 and 5.

The occurrence rate of these ceramic assemblage types also changes from earlier patterns. The most apparent contrast in the ceramic configuration is the significant increase in one-vessel type assemblages (22.2%) and the decline in the formerly 'full' three-vessel type set from 43.1% of the burials in phase 3 to 13.9% in phase 4. In effect, this standard assemblage no longer functions as the normative offering, as two-vessel type assemblage becomes increasingly more common, being distributed to 47.2% of the burials. Among two-vessel type assemblages, the ceramic sets are evenly divided between those comprised of a tripod and a liquid container and those comprised of a plate and liquid container. In addition, no graves in phase 4 receive the 'provider' ceramic assemblage. In summary, the broad trend in the configuration of ceramic offerings tends toward reduced or simplified sets.

Within the bronze ornament and weaponry assemblage (Table 8.12), five categories of composite offerings range from single weapon and bronze bangle inclusions to the most elaborate configuration consisting of a halberd and an array of bronze and gold ornaments found with burial M40. Recalling patterns from the previous period, the bronze animal buckle is only present in one grave per phase, making it the most uniquely occurring artifact type to cycle through the sequence. Among the weaponry types, the sword and newly-introduced spear co-occur with a whetstone.

Table 8.12: Distribution of bronze weaponry and ornament types in phase 4

Phase 4 Weaponry and Ornaments	
Bronze Knife + 'Full' ceramic set	1(2.8%)
Bronze Sword + whetstone + 'Full' ceramic set	1(2.8%)
Bronze Spear + whetstone + Two-vessel set	1(2.8%)
Bronze Halberd + Animal Buckle + Bronze Bangles + Gold Pin + 'Full' set	1(2.8%)
Bronze Bangles + Two-vessel and 'Full' ceramic set	2(5.6%)

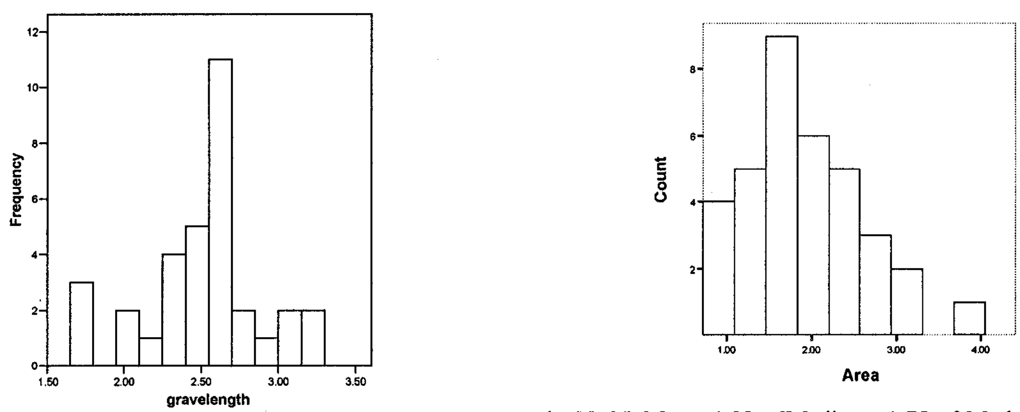
Configuration of grave assemblages

In general, all graves in phase 4 contain some kind of ceramic vessel offering. Three of the four graves containing bronze weapons also have the 'full' set of ceramic vessels. Because the 'full' vessel set is the least frequently occurring type of ceramic configuration (n=5 graves) in phase 4, their nearly exclusive co-occurrence and association with bronze weapons and ornaments suggests that the two material treatments may be coherently marking a social distinction. In contrast to previous periods where

ceramic configurations did not necessarily correspond with ornament and weaponry offerings, the convergence between these two categories of material treatment in the mortuary program suggests a potential marking of social differentiation in phase 4, tracking a trend that emerged earlier in phase 3.

Grave construction and size

The investment of labor into tomb construction is also reduced – for the most part to small earthen pits. No more tumulus burials were reported for phase 4. Instead, the only exceptional burial is a secondary ledge grave belonging to M41. Grave lengths show three potential groups: three outlier graves that are less than 2.00 m in length, a central modal group with a mean length of 2.50 m, and four graves that exceed 3.00 m in length. These ranges are consistent with distributions observed in the previous phases. However, grave sizes consist of only one distinct mode (0.50 - 3.30 m^2) and one outlier measuring 3.98m^2 (Fig.8.14b). Paralleling trends from previous periods, this large outlier grave chamber is associated with the secondary ledge grave M41, showing the effects of ledge construction on tomb size.



a. N=33 Mean=2.53 m Median = 2.60 m Mode=2.60 m

b. N=35 Mean=1.92 m^2Median = 1.75 m^2 Mode=1.63 m^2

Figure 8.14a and b. Distribution of grave sizes in phase 4.

Comparison of material treatments against spatial location and grave treatments

A comparison of grave lengths and material treatments shows a correspondence between 'reduced' material treatments and grave length. The eight individuals having only a one-vessel ceramic offering occupy either short burial pits or tombs that are less than the mean length. This observation suggests the possible role of personal

achievement in the configuration of social statuses. While the longest graves (> 3.00 m) do not correlate with more elaborate assemblages, graves containing bronze weapons tend to occupy tombs that exceed the mean length.

A comparison of grave construction and material treatments does not show clear indications of distinct levels of energy investment in mortuary treatment. Grave 41, the secondary ledge burial is not associated with more complex mortuary assemblage; its grave contents consist of a two-vessel ceramic assemblage. In addition, the well-endowed burial M40 and other graves containing bronze ornaments and weaponry do not occupy larger grave chambers. Thus, the lack of direct correlation between tomb construction and material treatment suggests that there are few direct symbolic referents of vertical differentiation.

The distribution of certain types of material treatments appears to be spatially discrete. Specifically, bronze weapons, ornaments, and the new ceramic composite type appear to be distributed to individuals located in the eastern extent of the cemetery. A more detailed examination of the distribution shows that burial M40, which contains the most elaborate ornament assemblage, and burial M48 and M42, which both contain a bronze sword, are located in close vicinity of the secondary ledge grave M41. Graves containing the 'new' ceramic composite set in the later sequence are all located adjacent to one another and follow the alternative grave orientation, 210 – 250° (see Fig.8.11b). Both material and burial treatment deliberately differentiate these individuals from the rest of the community.

Summary of the mortuary ritual from phase 4 (330 – 180 BC)

The mortuary program in phase 4 shows emergent transformations in the spatial and material treatments of the deceased. Most importantly, existing horizontal dimensions of organization appears to play a diminishing role in mortuary ritual as grave location progresses/shifts? toward a randomized pattern of distribution. The overall spatial patterning did not produce the aligned burial rows observed in earlier periods. Accompanying this shift is also a general decline in expenditure on mortuary ritual. Ceramic offerings tend toward reduced or simplified sets and the 'provider' set is absent from the burial assemblage. Only one individual receives more elaborate material treatment consisting of bronze weaponry and gold ornament. In addition, the

disappearance of tumulus constructions suggests a decline in the level of corporate investment in the funerary ritual. The lack of direct correlation between material and labor investment offers weak support for the expression of vertical differentiation in the funerary rite.

Instead, the primary dimension structuring individual identity and social position may be associative in nature. Specifically, graves containing more distinguished material offerings such as bronze weapons, an array of ornaments, and the 'full' vessel sets are located in vicinity of the secondary ledge grave. One possible explanation for the concentration of these distinguished individuals around burial M41 may be attributed to its wider influence as evidenced by the greater investment directed toward the construction of a secondary ledge feature. In summary, there is a formalized de-emphasis on the horizontal social elements that previously gave rise to discrete spatial patterns in phase 4. The beginnings of this transition were already apparent in phase 3. The emerging pattern suggests that vertical differences may be contingent on personal social affiliation such that instead of an equal distribution of qualitative distinctions across various social segments, burials possessing these qualitative distinctions are concentrated in spatial proximity to one particular individual.

Phase 5 (180 – 105 BC)

As mentioned earlier, the discovery of Han items in the soil matrix suggests tombs from this period were possibly disturbed. Thus, the 25 graves reported by the excavators may only partially represent the final generation of the Hengdalu community. Nonetheless, the preserved graves reveal that the spatial distribution of burials maintains patterns initiated in phase 4, asgrave placement continues to expand in the eastern and northwestern corner of the cemetery. In addition, graves do not appear to segregate into discrete axial rows and are instead divided into three areas (see Fig. 8.15). The small sample size and the increasing "noise" in the distribution pattern yielded a NNI value of 0.90417 that is not statistically significant (Table 8.13). Grave orientation within these three zones however appear to be internally consistent. Specifically, graves within the same vicinity tend to follow the same orientation. Burials located in the southern sloped area range between 265 – 285°. In contrast, burials located along the central eastern half

of the cemetery (M12, 13, 20, and 31) range between 233 – 240°, recalling the same trend observed in the later sequence of phase 4. Meanwhile, burials located in the northwestern corner of the cemetery are oriented in the normative range between 275 - 285° with two outlier burials (M1 and M8) oriented 300 – 345°. The orientation pattern in the central eastern half and northwest corner of the cemetery accords with burial trends observed for the later sequence of phase 4.

Table 8.13: NNI values for phase 5 burials

	Observed Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index	P-value
Phase 5 (n=25)	1.49	1.89	.7910	Not significant

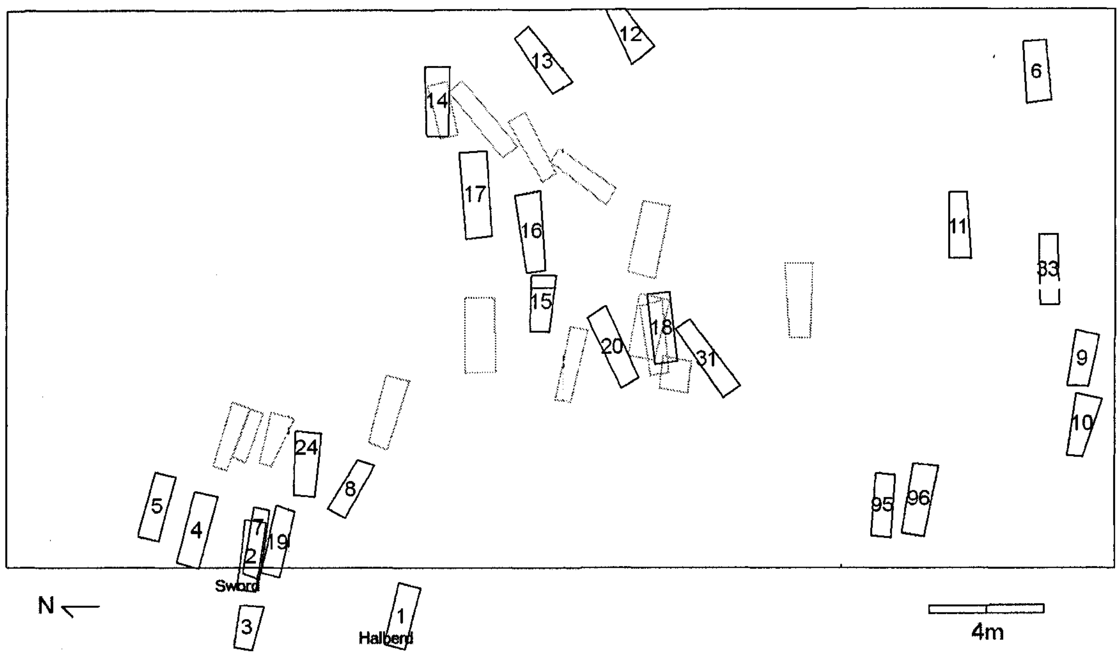


Figure 8.15. Plan view of phase 5 burials.

Patterns of material differentiation

The composition of grave offerings maintains trends initiated in phase 4. One and two-vessel ceramic assemblages remain the most widely distributed categories of grave offering (n=12 or 48% of the burials) (Table 8.14). New vessel types are again either integrated into existing ware configurations within the two and three-vessel sets or separated into a distinct set consisting entirely of new ware types. This new assemblage type increases in frequency and is present in five burials (20%) while the 'full'vessel set

is present in only four burials (16%) and no 'provider' sets were found (Table 8.14). In effect, ceramic offerings tend toward simplified sets.

Only two burials in phase 5 contained bronze weaponry while bronze ornaments were completely absent. One bronze sword and one halberd were found in the entire assemblage. The bronze sword is associated with burial M2 and halberd with burial M1 (see Fig.8.15). In continuation of phase 3 and 4 trends, bronze weaponry co-occur exclusively with 'full' ceramic sets.

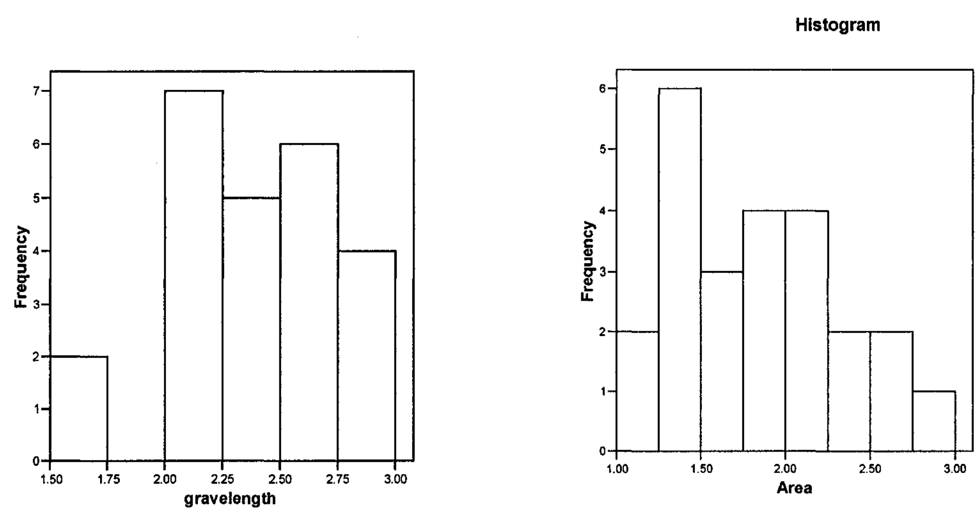
Table 8.14: The distribution of ceramic assemblage types in phase 5

Phase 5 Ceramic Sets							
One-Vessel		Two-Vessel		'Full'		'New'	
Tripod	1(4%)	Tripod+jar	1(4%)	Tripod+jar+plate	3(12%)	Jar+T&Sjar+Ped.jar+plate	1(4%)
Plate	1(4%)	Tripod+jar+Fjar	1(4%)	Tripod+jar+FJar+plate	1(8%)	+Ped.Plate	1(4%)
Pjar	1(4%)					Jar+plate+Ped.plate	1(4%)
Jar+SJar	2(8%)	Plate+jar	1(4%)			Jar+plate+Ped.Jar	1(4%)
Jar+Fjar	1(4%)	Plate+FJar+SJar	2(8%)			Jar+Sjar+Ped.Jar	1(1.4%)
	6(24%)		6(24%)		4(16%)		5(20%)

Note: Fjar=Flared mouth jar, Sjar=Shouldered jar, Tjar=Tall neck jar, Ped.plate=Pedestal plate, and Ped.Jar=Pedestal jar.

Grave construction and size

In general, the distribution of grave lengths indicated one primary length group (2.00 – 3.00 m) and two short outlier graves, showing a pattern that is consistent with earlier periods. No grave pits exceed 3.00 m in length however. In light of the expansion in cemetery space initiated during phase 4, the disappearance of long tomb pits cannot be attributed to a spacing problem. Burials from phase 5 consisted entirely of earthen pit tombs lacking the secondary ledge and tumulus constructions found in earlier periods. The distribution of grave sizes indicates primarily one modal group ranging from 1.00 – 3.00 m² with a noted left skewed peak at 1.30m² (Fig.8.16b). Based on the similarity in size distribution and mode value in the range 1.20-1.40 observed for phases 1-3, it is likely that phase 5 has one general size class represented in the sample. The 'simplification' in tomb construction and disappearance of long tomb pits manifest physical shifts in the grave treatment that suggest social constraints 'capping' the investment directed toward one dimension of the mortuary ritual.



a.
N=24 mean=2.36 m median=2.36 m mode=2.20 m

b.
N=24 mean=1.8479 m² median=1.8409 m² mode=1.20 m²

Figure 8.16a and b. Grave length and size distribution for phase 5.

Comparison of material treatments against spatial location and grave treatments

Different ceramic sets appear to be distributed in a spatially discrete pattern consistent with observations from phase 4. Graves containing one and two-vessel ceramic sets all maintain normative grave orientation ranging from 265 – 285°. These

graves are located along the southern extent and the northwestern corner of the cemetery ground. Meanwhile, graves oriented 233 – 240° are distinguished by entirely new composite ceramic sets and occupy the same proximal location concentrated in the eastern midsection of the cemetery (see Fig.8.15). The four graves to the north of these burials maintain traditional ware sets and normative orientations. This contrastive patterning also differentiated the mortuary ritual in phase 4 suggesting that wider attempts to delineate or mark different group identities are leading to the emergence of more formal symbols. The lack of correspondence between these groups and variables of energy expenditure suggests that these differences may not be associated with vertical dimensions of organization.

Summary of the mortuary ritual from phase 5 (180 – 105 BC)

Though burials from this terminal period were subject to various post-depositional disturbances, transformations in the mortuary ritual nevertheless produced emergent spatial and material patterning. Specifically, there appears to be a correspondence between spatial location, grave orientation and the nature of ceramic offering composition. New vessel forms were incorporated into existing composite ceramic arrangements but also provided the basis for the formation of a unique new type of offering. Graves containing the conventional ceramic offering continued to follow the normative grave orientation pattern. In contrast, burials with the new ceramic set followed an alternative grave orientation and are furthermore confined to the same area of the cemetery.

This mortuary variability is more likely shaped by associative rather than vertical dimensions. Burials, regardless of their material offering referents, occupied small grave chambers without any of the distinguished tomb constructions suggestive of different levels of labor investment. Rather, the intentional differentiation of individuals by spatial location and assemblage type suggests this mortuary marking extends beyond the scope of personal identity to symbolize some kind of affiliative relationship. While the precise nature of this association remains difficult to determine, this transition in the internal structure of the mortuary ritual suggests that the Hengdalu community may have undergone societal shifts.

SOCIAL ANALYSIS AT THE DIACHRONIC SCALE

A cemetery blueprint conceived on horizontal scales

The distinctive spatial layout of the cemetery site emphasized the corporate foundations of the Hengdalu community. First and foremost, within the two initial periods of mound construction, the geometry and mechanics of cemetery layout showed that individual graves were separated into discrete axial rows, each observing a common grave orientation. This spatial and alignment order maintained over cycles of mound construction suggested that the community intentionally created physical distance between groups of individuals in a dual process of social segregation and group formation. In foregrounding an individual's ties relative to others, the mortuary ritual emphasized the importance of group affiliation and membership within this community. The regularity and consistency with which this dimension of identity was reproduced required an ideological vision of community to be upheld as well. Specifically, the size and allocation of mound space and the renewal of that space through episodic construction depend on community-wide participation and agreement. Thus, the mortuary space not only partitions its members but in ordering them into a shared and circumscribed space, also reproduces a symbolic version of community.

Patterns of vertical differentiation

Beginning in phase 2 (690-510 BC), the emergence of new tomb architecture and preferential distribution of grave offering types suggest a dynamic process of group differentiation. Two burials located in adjacent rows are interred in chambers with a secondary ledge feature and receive distinctive grave offerings: grave M154 contains a 'provider' ceramic set and M152 contains a bronze sword (Fig.8.6). The quantitative nature of the ceramic composition and the limited distribution of 'provider' assemblages to select rows suggest that groups possibly had different productive or economic capabilities. While the customary treatment specifies a 'standard' share of food offerings, some individuals receive greater portions, recalling a similar pattern observed from Batatai. The staple surplus implied by M154's ceramic offerings and its more elaborate tomb structure underscore the ability of this individual to access greater resources both in staples and labor. However, these personal distinctions in no way supercede his/her group or corporate ties as evidenced by its apparent conformity to spatial guidelines.

This pattern of internal differentiation becomes more apparent in phase 3 (510 – 380 BC), where certain individuals (and their groups) are able to direct ever greater investment in mortuary ritual toward the construction of tumulus graves. The three tumulus burials are each associated with distinct rows in the northern extent of the cemetery site. One individual (#M110) is additionally distinguished by the only bronze ornaments (bronze bangles and animal buckle) in this assemblage. While the 'provider' assemblage is not directly associated with tumulus graves, their exclusive distribution to graves located in proximity to M123, the largest tumulus burial, underscores the social influence exerted by this individual. In addition, the clustering of burials around #M123 (Figure8.9a) shows a departure from the normative alignment rule suggesting that these affiliates were attracted to this individual not by traditional principles of affiliation. It is possible that this spatial aggregation represents an attempt by individuals to gain elevated social distinctions and status through association.

Vertical differentiation is also configured by personal achievements. Beginning in phase 2, burials with bronze weaponry appear in low frequency in the grave assemblage. The rarity of weaponry inclusions and the preferential association of 'full' or 'provider' type ceramic offerings with these assemblages suggest that the two material treatments express a qualitative distinction. Because these burials almost always occupy tomb pits exceeding the mean grave length or the longest graves from phases 2 to 4, it is possible that this distinction is only achieved through accomplishments accrued through individual life histories. These burials are never associated with tumulus structures or secondary ledges, with the exception of grave M152 in phase 2. As 'full' vessel sets decline in frequency from phase 4, the continued distribution of comprehensive food offerings exclusively to weaponry burials suggest that this status maintains social prominence. The lack of correlation between variables of energy expenditure and material treatment indicates that vertical statuses are not configured on a single social dimension but crosscut by horizontal (age-dependent) and individual affiliation.

Internal cycles of social competition

In effect, trends observed from phases 2 and 3 reflect a community experiencing cycles of gains and losses across different generations. In order for formalized systems of ranking to be supported, one would expect that staple surpluses are banked across

successive generations such that one social group would achieve lasting economic privileges and social prestige or influence. Instead, observations from phases 1 to 3 show that the distribution of the more elaborate burials is not spatially contiguous across the different generations. Tumulus and secondary ledge burials are not associated with the same spatial rows across the successive stratums. In addition, the distribution of 'provider' ceramic assemblages is not spatially discrete across different generations.

Transformation of horizontal structures

Beginning in phase 4, both the spatial ordering of graves and grave offerings undergo significant transformations that last into the final period of cemetery use at Hengdalu. The most visible shift in the overall mortuary ritual is the relaxation of social principles structuring spatial alignments. Graves do not segregate into distinct axial rows, but rather tend to be distributed in a randomized pattern, in particular in formerly unoccupied sections of the mound. New graves are generally placed either into the central eastern section or the northwestern corner of the mound. As mentioned earlier, the increase in NNI values also reflects this random distribution pattern. The emergence of an alternate grave orientation among burials located in the central eastern section of the cemetery marks another important shift to the customary mortuary program.

Accompanying this transformation to the cemetery's mechanical layout is the introduction of new ceramic ware types that simultaneously alter the composition of the basic ceramic offerings. In general, new ceramic wares are both integrated into existing ceramic configurations and separated into a distinct set consisting entirely of new ware types. This pattern of material consumption suggests strangely both *substitutive* and *transformative* kinds of change. However, even existing configurations show a trajectory of change toward simplified or reduced sets consisting of one and two vessel type sets. The 'standard' ceramic assemblage comprised of the classic local tripod vessels begins to decline in frequency while the 'provider' assemblage disappears from phase 4 and 5 assemblage altogether. The expected share of food offerings once accorded to most individuals now receives less ritual attention. In contrast, the new assemblage types are notably marked by the absence of classic ware types such as the tripod and flared mouth jars and are characterized by pedestaled vessels. By phase 5, tripod and flared mouth jars never co-occur with pedestal vessels in the same ceramic assemblage. Furthermore, these

new ceramic sets are associated strictly with burials following the alternate grave orientation.

At the eve of Han conquest, community wide changes are therefore already evident at Hengdalu. The principles of social affiliation at the foundations of this community and the general mortuary treatment begin to lose their salience. For unknown reasons, the same ritual attentiveness cannot be communally supported. While some individuals attempt to provide for their deceased according to existing traditions, others intentionally emphasize a changing order through alternate modes of mortuary treatment. Within a once highly systematic mortuary tradition, there now appears to be heterogeneous consumption practices that present a bifurcating cultural tradition.

Chapter 9
Synthesis and Conclusions

The previous two chapters presented social patterns at the synchronic and diachronic scale for the two mortuary mounds that I was able to analyze in detail in this study. The following discussion offers a brief summary on the findings about the social reconstruction detailed in the previous two chapters. This discussion allows for a comparison of inter-cemetery trends to identify the social dimensions and scales differentiating the communities of Batatai and Hengdalu. Diachronic trends are compared with expectations presented in the cultural change model (chapter 4) to identify the structure of culture change at each cemetery community. The chapter concludes with a discussion of the regional role of each community (based on geographic location and scale) in structuring the nature of culture change.

SYNCHRONIC VIEW OF COMMUNITIES BEFORE CONTACT

Batatai

Importance of group membership

In the initial periods of mound use dating to as early as 900 BC, most individuals are not externally marked; inclusion in the cemetery confers most importantly membership in the community. The majority of burials (>50%) did not contain any material offerings, with the most standard and obvious form of funerary treatment being interment in the cemetery mound. This sense of collective identity is also supported by the overwhelming conformity in grave orientation toward the east. The pervasive and consistent nature in which these grave treatments are being reproduced across the entire assemblage underscores the importance of group membership.

Vertical differentiation

Social differences are structured by both personal achievement and ascription. In particular, greater levels of corporate involvement in the funerary ritual are not exclusive

to individuals receiving the most elaborate material offerings but also accorded to small and short graves. These latter graves tend to contain little or no material offerings. Elaboration in bronze weaponry, ceramic and ornamental offerings, in contrast, tended to be associated with individuals occupying graves meeting at least the mean length, indicating the accumulation of distinctions relative to life statuses. The association of tumulus structures with these small and empty graves suggests this key burial treatment marks an ascriptive status that varies independently of an individual's economic qualifications.

Personal achievements associated with life statues are also integral to the configuration of social differentiation. During the pre-contact periods represented by phase 1 to 3, certain 'rare' and distinct material offerings identified as qualitative distinctions were preferentially distributed to only a few individuals within each period. These material offerings were distinguished by the elaborate nature of their composition (more comprehensive set of food offerings and weaponry implements). In particular, the least common weaponry types such as the sword sheath and quiver were always associated with a 'full' weaponry outfit (halberd, sword, and knife or ax) and distributed to only two other burials in addition to the 'apical' individual discussed below. These individuals did not necessarily receive tumulus structures, indicating the accumulation of these material distinctions was not dependent on ascriptive rights. Or conversely, these economic capabilities did not necessarily command the social obligations and effort for the construction of a tumulus marker. Only an individual's position in the genealogical order determines the degree of influence over the corporate group.

Instances where achieved and ascribed distinctions converge in generating an 'apical' status are always exclusively identified with one individual in each phase (graves 279 in phase 1, 265 in phase 2 and 183 in phase 3). These individual graves are not only marked by tumulus structures but also occupy exceptionally long graves that exceed the dimensions expected within the range of standard bodily height. All three grave assemblages are also distinguished by the following uniquely occurring material symbols: jade collared disk, weaponry containers, a conspicuous display of food offerings, referents of bronze production (lead ingots, tubes, or the actual mould) and/or jade production (cortex). In effect, the multiple sets of food vessels or oversize tripod

associated with these graves further underscore the collective undertaking associated with this particular individual's funerary event. The cycling and reproduction of these symbols of distinction over a five hundred year span suggest not only a sustained tradition of funerary rites but also of social structures that are – above else – with historical accountability.

Hengdalu

Importance of intra-group differentiation

As mentioned in chapter 8, social organization at the Hengdalu site contrasts with the Batatai community in that the primary source of social variability in the mortuary program is attributable to horizontal dimensions of differentiation. Beginning in the earliest phase of mound use (~900 BC), graves are distributed in spatially distinct rows, which are separated by empty zones and defined by consistency in grave orientation along individual row alignments. That grave location and orientation together contribute to the visibility of these linear rows is symptomatic of intentioned spatial planning whereby individuals are simultaneously being differentiated and grouped into physical and social units to mark affiliation. The discrete location of an individual's place in communal space represents the initial process in the proper treatment of the dead, but also a community-wide attempt to internally differentiate its ancestors.

Vertical differentiation

In the pre-contact periods, vertical distinctions are neither redundantly nor formally marked in the mortuary ritual. Material and grave treatments do not converge in substantiating patterns of social scaling. However, inter-group differences and competition are clearly evident. In general, every individual receives material offerings in the form of foodstuffs, as evidenced by the distribution of ceramic vessel sets to each grave. During the initial two phases of mound use, differentiation between the social segments is evidenced by the preferential distribution of 'provider' ceramic sets and bronze weaponry to certain social groups. The most distinguished burials (M152 and M154) in phase 2, which are elaborated by the construction of a secondary ledge feature, are centrally featured in the mound and bisect the cemetery into two equal north and south sections.

Vertical trends in social differentiation become more clearly articulated in phase 3, though the statuses are contingent upon an individual's associative and social affiliation. The construction of tumulus structures and their preferential distribution to the northern half of the mortuary mound continue internal patterns of horizontal differentiation. It is possible that inter-group competitions have contributed to the emergence of *social ascription,* manifested by greater corporate investment toward the construction of tumulus structures. Among these tumulus burials, one individual is distinguished by a bronze animal buckle, which was exclusively distributed in the previous phase to an elaborately furnished short outlier grave.

Although elaboration in material treatment does not necessarily correspond with tumulus structures (paralleling trends at Batatai), individuals receiving 'provider' assemblages are located in spatial proximity to the tumulus burials (Fig. 8.9a). The clustering of graves around tumulus burials and the more conspicuous nature of their mortuary display suggest the escalation of corporate influence in attracting followers. If spatial location already figures significantly in the mortuary symbolism and conceptualization of the mound space, the emergence of these spatial tomb markers may articulate an extension of the increasing importance of social affiliation. More specifically, it provides evidence for the importance of personal affiliation in structuring social status.

Inter-site comparisons

In general, the two cemetery sites are characterized by similar configurations of material and grave treatments. In the pre-contact periods, the mortuary ritual consisted of the creation of a multi-generational cemetery space, underscoring a certain vision of community anchored historically to a fixed space. Graves at both communities followed the same east-west axis of bodily orientation, suggesting a shared macro-regional mortuary tradition and belief system. In addition, tumulus constructions were incorporated into the mortuary ritual to express social statuses with corporate distinctions at both communities. The artifact types and categorical units representing the mortuary assemblage were also broadly shared across both cemetery sites.

Beyond this shared vocabulary in the mortuary programming, the 'syntactical' rules configuring the funerary ritual could not be more different between the two sites. The differences in 'syntax' are associated with the social variability contrasting the organization of the two communities. While the majority of burials at Batatai received no offerings in the initial phases, community prescriptions at Hengdalu specified that every individual receive a basic share of food offerings. Two- and 'full-' vessel sets were common grave inclusions at Hengdalu while their distribution at Batatai showed a more discriminatory pattern of distribution. In effect, food offerings were instrumental to the creation of vertical social differentiation at Batatai while at Hengdalu, foodstuffs presented generally a widely available and for the most part an 'unmarked' category of offerings.

The disparity in the rate of occurrence and range of bronze implements also highlights the different social scales of the Batatai and Hengdalu communities. In addition to the higher frequency of bronze weaponry associated with the Batatai assemblage (see Figure 6.10; 87.1% of all weapons), hafted weapon types and weaponry containers occurred only at Batatai. Stone ornaments, such as the jade collared disk, agate and carnelian beads, were also limited in their distribution to the Batatai assemblage. The range and elaboration of the material assemblage were distinctly configured to represent the internal differentiation in social roles and statuses within the Batatai community. In particular, the configuration of bronze weapon and ornament types marked economic distinctions associated with personal achievements. The 'rare' and idiosyncratic objects identified in chapter 6 (jade collared disk, bronze moulds, and lead ingots) in fact served to symbolize a particularly distinguished social status. In other words, this contrastive disparity in material distribution is consonant with the degree of structural elaboration characterizing Batatai's social organization where social differences receive more formal and systematized treatment in the mortuary ritual.

In contrast to Batatai, the lack of correlation between variables of energy expenditure and material treatment indicates a less articulated system of formal ranking at Hengdalu. The least common grave offering types were bronze weaponry, bronze ornaments, and 'provider' ceramic set. The lack of convergence on these three material dimensions suggests a mortuary program that is organized along other social principles.

More specifically, these qualitative referents appear to be separately marking social distinctions that become increasingly dependent upon and ordered according to personal group affiliation. In sum, while the mortuary ritual is also conceptualized on a vision of community, the Hengdalu community is internally differentiated into horizontal segments that undergo dynamic cycles of inter-group competition.

DIACHRONIC PATTERNS OF CHANGE

The model of culture change presented in chapter 4 specifies that given variable kinds of cross-cultural engagement and internal social constraints, five different patterns of change can emerge: *maintenance*, *creolization*, *transculturation*, *acculturation*, and *resistance* (see Figure 4.2). Each form of cultural change anticipates distinct shifts in the configuration of grave and material treatments in the funerary program. I briefly summarize each form of culture change specified in the model.

> *Maintenance*: Existing patterns of horizontal and vertical distinctions should be consistently configured on existing material and grave treatments.
>
> *Creolization:* The organization of horizontal and vertical dimensions of social variability should conform to existing trends. In the mortuary program, these social distinctions will be configured on composite cultural treatments that will show regularity and consistency in their distribution.
>
> *Transculturation:* Existing horizontal and vertical dimensions can either be expanded upon or restructured to adapt to conditions of imperial incorporation. In the mortuary program, social distinctions may be configured on both existing and Han treatments depending on how individual members and social groups are integrated into this system. Thus, the mortuary ritual may elicit an idiosyncratic distribution of composite cultural practices.
>
> *Acculturation:* Existing horizontal and vertical dimensions are transformed to either accommodate Han social principles (outlined in chapter 3) or experience a truncation to existing patterns of vertical differentiation. Mortuary treatments are expected to be configured on Han grave and artifact types across the entire cemetery assemblage.
>
> *Resistance:* Existing horizontal and vertical dimensions are sustained but external stress on the community may affect its ability to meet existing expectations in the funerary ritual. The mortuary ritual is expected to be consistently configured on native treatments but dimensions of the funerary ritual requiring greater effort and energy investment may not be faithfully reproduced.

Both cemetery sites show two sequential stages of social change: the first shift coincides with phase 4 at both, during a period of social and political turmoil in the wider region (Warring States Period). The second shift occurs during phase 5 following Han conquest. Social formations from the post-conquest period will be evaluated against the expectations outlined in the culture change model to determine the structure of culture change at each community.

Batatai

Beginning in phase 4 (315 BC), mortuary changes show a diminishing investment in the expression of social differentiation. More specifically, existing patterns of social differentiation persist but the expression of these distinctions does not receive previously observed levels of effort and attention in the mortuary ritual. The local emphasis on grave elaboration (large grave pits and tumulus structures) no longer receives corporate support and the hallmark symbols of social status (bronze weaponry containers and 'provider' ceramic sets) are absent from the mortuary assemblage. While the jade collared disk continues to be distributed to one individual, the 'waning' of key referents for creating social differentiation suggests a disruption affecting the broader community. Against the wider backdrop of regional geopolitics, phase 4 coincides with the precipitation of Qin State expansion into the immediate region adjacent to the Southwest. Having conquered the three powerful states of Chu, Ba and Shu by 316 BC, the Qin State quickly consolidated regions that once separated Yunnan from the Central Plains cultures. As mentioned in chapter 3, if the Chinese accounts of trade between Southwest societies and the Ba and Shu are to be accepted, then the social fluctuations observed at Batatai may reflect the shift in regional politics. This proposed explanation however remains to be substantiated on the basis of future archaeological research.

Following phase 4, the Qujing region is conquered and incorporated into the Han imperial state (109 BC). The mortuary ritual at Batatai experiences significant social transitions that closely reflect a transculturation pattern of change. The evolution of the Batatai community reveals a society becoming increasingly more complex as vertical dimensions are expanded upon in the formalization of status distinctions. In particular, the differential distribution of economic distinctions among 'weaponry' burials illustrates the elaboration of earlier social patterns. Both Han and native mortuary vectors

contribute to the generation of social elaboration through the artifact processes of *addition*, *replacement*, and *rejection*.

A primary axis of mortuary variability in phase 5 is associated with the differentiation of two types of 'weaponry' assemblages, divided between bronze and iron implements. Within each group of burials, individuals are further distinguished by economic differences. While individuals receiving a single iron knife formally correspond with a social position associated with a single bronze blade or bronze knife in previous periods, the differential distribution of Han coins, belt buckles, and hafted iron implements within this group of burials suggests greater internal elaboration. In particular, the inclusion of a waist ornament and hafted iron implements typically occur with individuals who also have a greater quantity of coins. Han coins appear to represent an emergent form of quantitative distinction in the mortuary program. Through the artifact process of *addition*, the imperial economy introduced a new form of 'accumulative' economic wealth, which has no existing parallel. Furthermore, if the probability of receiving a more complex weaponry assemblage and greater number of coins is directly associated with grave length, then the configuration of social status may be structurally bound to achievements made through life. The compositional nature of these burials resembles mortuary trends observed for the lower social stratum or 'commoner' status individuals in Han cemeteries (see chapter 3).

Individuals buried with bronze weaponry implements, in contrast, never contain iron knives and coins among its offerings. Through a process of artifact *rejection*, the most widely occurring Han items are excluded from these assemblages. The kinds of waist ornament associated with these graves consist entirely of bronze buckles or buttons and never Han belt hooks. However, iron hafted implements and Han cooking vessels – object categories concordant with existing counterparts and rules of assemblage configuration – are included in these grave offerings, indicating a process of artifact substitution or *replacement*. In sum, the grave assemblages present a mixture of native and Han elements, which as discussed in chapter 3, are a common occurrence across the borderlands of the Han Empire. The discriminatory nature in which Han objects are adopted and the maintenance of local weaponry configurations, however, suggest that these material configurations may intentionally be marking a 'martial' distinction and

cultural affiliation. In effect, the contrastive nature of the mortuary program indicates bifurcating trajectories in the funerary ritual where certain groups more readily adopt Han practices while others tend to be more resilient in keeping culturally inscribed roles.

This contrastive reaction in the mortuary program underscores the tenuous nature of imperial integration, which, not surprisingly, is most unambiguously documented in the funerary ritual surrounding the 'apical' figure, burial M69. This individual *added* material elements of Han elite practice, as evidenced by the bronze embossed seal, a bronze mirror, bronze serving vessels and iron horse trappings in its grave assemblage. In effect, by replicating Han sumptuary rules to assert social prestige and authority, the social structure could be transitioning toward a formal Han class model, as would be expected under acculturation. The bronze seal, in particular, reveals an understanding of distinctly Han hierarchical principles. However, in maintaining the 'native' symbols of qualitative distinction such as the jade collared disk and sword sheath, along with a local bronze buckle, lead ingots and bronze piece-mould, social status is also constrained by cultural and historical constructs. This selective integration of cultural referents indicates the potential of individual action to mediate across two social systems, thus underscoring the transcultural nature of change occurring at Batatai.

Despite what appears to be competing and diverging interests, the Batatai group continues to share the same community mortuary space, thus affirming patterns of group membership. In particular, 78% of burials have now adopted the Han pattern of north-south grave orientation, suggesting an attempt by individuals to observe conformity and order in the cemetery despite different cultural orientations in their material treatment. The remaining 22% of burials that continue to be oriented along the east-west axis consist of both 'native' and Han style assemblages, suggesting that certain individuals do not follow community guidelines.

Hengdalu

Beginning in phase 4 (330 – 180 BC), the Hengdalu community also experiences marked shifts in the mortuary program. In contrast to the previous five hundred years of funerary customs, structures of group affiliation and social differentiation begin to become less salient. Where individual identity was previously bound to group affiliation,

those social prescriptions no longer provide the main social pivot in community organization as graves are distributed in randomized order. New burials are not segregated into spatially discrete rows but according to the availability of space. Like Batatai, this transformation is characterized by a reduction in the level of funerary ritualism with no evidence of corporate involvement in tumulus construction and a sharp decline in the distribution of 'full' ceramic sets (from 43.1% in phase 3 to 13.9% in phase 4) and of ornamental elaboration. While food offerings are sustained as a principle feature of the ritual, the prevalence of simplified ceramic sets (one- and two-vessel sets) indicates a general decline from previous levels of funerary attentiveness, which may reflect wider social and economic fluctuations within the community.

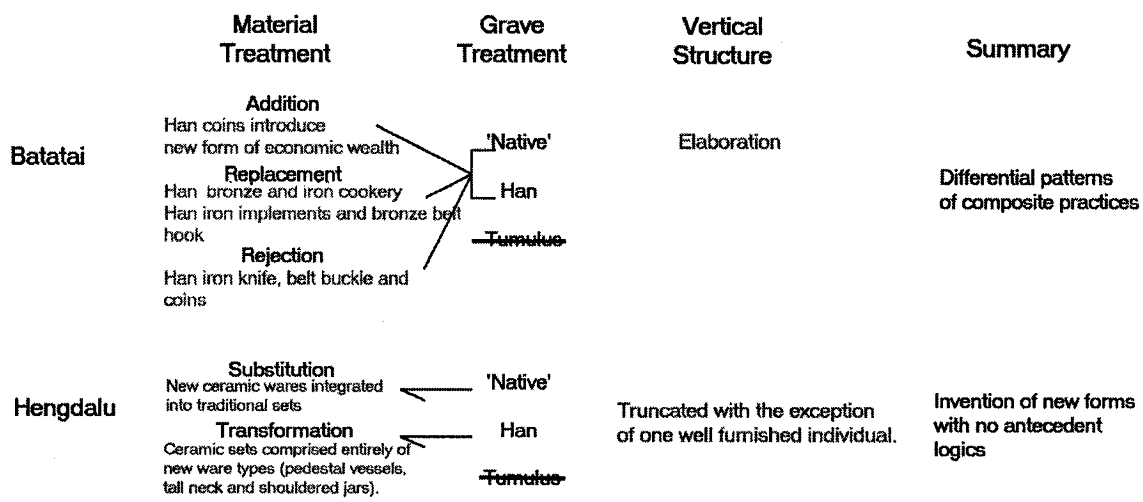


Figure 9.1. Summary of mortuary treatments and their structural changes at Batatai and Hengdalu following Han conquest.

However, this broad pattern of funerary 'frugality' is contrasted with the emergence of one exceptionally well-endowed grave (M40). As mentioned earlier, the 'rarest' types of mortuary items ('full' ceramic set, bronze halberd, bronze animal buckle, and even a gold needle) are exclusively distributed to this individual. The concentration of these offerings with grave M40 in comparison to the general modesty displayed by other members suggests *1) that horizontal structures of social differentiation are waning* and *2) the escalation of vertical status.*

Beginning in the later part of phase 4 to phase 5 (180 – 105 BC), two coinciding cultural processes - <u>creolization</u> and <u>maintenance</u> – transform the structure of mortuary

ritual. Accompanying the transformation to the 'blueprint' of the cemetery is the introduction of new ceramic ware types. New ceramic ware types are both integrated into existing ceramic configurations through *substitution* and separated into its own distinct set presenting a newly *transformed* kind of ceramic set. Individuals receiving this new ceramic set are also distinguished from other members in following a southwest grave orientation, a trend approximating Han practices. In addition, these individuals are concentrated in the center part of the mound (Figure 8.11b and 8.12). The mortuary treatment associated with this group therefore pairs a locally innovated kind of ceramic assemblage with a grave pit oriented in the Han tradition, presenting a composite mortuary practice that is neither exclusively Han nor native. Contrary to changes observed at Batatai, the emergent mortuary treatments do not coherently prototype Han standards. This transformed mortuary distinction presents an invented tradition, which despite combining culturally discrete practices does not necessarily reflect a coherent cultural affiliation. Thus, this culturally mixed practice evidences a <u>creolized</u> social transformation – an adaptation of different cultural elements to new structures.

In stark contrast to this social group, the remaining individuals <u>maintain</u> existing mortuary traditions, observing the east-west pattern of grave orientation and the use of local vessel sets as grave offering. In particular, individuals occupying social roles distinguished by bronze weaponry (sword and halberd) adhere to local mortuary customs with the greatest fidelity, recalling a persistent pattern also documented in phase 5 at Batatai. Specifically, the traditional 'full' vessel sets are almost exclusively associated with these five individuals at Hengdalu in the later part of phase 4 and phase 5, suggesting the historical and cultural foundations of these 'martial' identities or roles. By extension, the marking of this social distinction following Han conquest at both communities indicates the cultural inalienability of this particular distinction wherein no Han counterpart can be substituted (see Weiner 1992 and Thomas 1991).

In summary, while some individuals attempt to provide for their deceased according to existing traditions, others intentionally emphasize a changing order through alternate modes of mortuary treatment. The latter group creates a coherently patterned composite practice that is differentiated from the Bronze Age tradition, but not

commensurate with Han customs. Within a once highly systematic mortuary tradition, there now appear to be heterogeneous practices marking community bifurcation.

UNDERSTANDING INTER-SITE DIVERGENCES

The contrastive trajectories of culture change within the Qujing region reflect the complex nature of imperial interaction such that within one small circumscribed area, local communities can react in highly variable ways. In other words, culture change defies homogenous definition at the scale of cultural or regional groups, polities and even communities. The variability observed at Batatai and Hengdalu will now be evaluated against the regional backdrop to examine how geographic and locational differences contribute to an explanation of the variable responses.

As discussed in chapter 5, the site locations are contrasted by differences in elevation and also availability of arable land. Batatai is located on a low terrace overlooking the broadest section of the floodplain in the region. In contrast, Hengdalu is located in a section of the basin where the river valley narrows markedly (see figure 9.2). The site is also located in the piedmonts that are not immediately adjacent to the alluvial basin. Modern-day farmers in surrounding villages intensively terrace and irrigate the hillside for rice cultivation.

These contrasts in geographic location and resource distribution between Bronze Age sites may account for the differences in site size and community organization. As mentioned in chapter 5, Batatai is the only documented multi-mound complex, while other Bronze Age cemetery sites consist of a single mound. Based on the size of the excavated area and the total number of excavated individuals, I calculated approximate population size for each site and presumably community.[1]

Table 9.1: Community population estimates based on burial sample size.

Site	Total N	% excavated	Excavated area (m^2)	Mound height (m)	Total burials
Hengdalu	188	25	1000	8.0	752
Batatai	342	10	480	8.0	3053
Pingpo	220	18	110	3.0	1222

Even though these calculations represent a very rough estimation, the resulting numbers are nevertheless striking in showing what may possibly be communities of

[1] The formula for estimating cemetery population: (N individuals/excavated area m^2) * total area

disproportionate scales (not accounting for diachronic patterns). If these cemeteries presumably contain all members of a particular community, then Batatai would emerge as a significantly larger and organizationally differentiated community, which would effectively need a larger catchment zone in the alluvial basin.[2]

In effect, the disparity in the distribution of bronze artifacts and status symbols fashioned from bronze and jade may be a function of the different demographic and organizational scales of these two communities. The current state of archaeological research cannot address region wide patterns of political and economic integration. Unless more data emerges on Bronze Age settlement patterns, it is not clear if Batatai is a single 'hierarchically' structured regional polity or one of several competing centers in the Qujing region. However, the inordinate concentration (87.1%) of bronze weaponry implements and ornaments at Batatai in comparison to their paucity at Hengdalu and Pingpo suggests a socially controlled pattern of circulation potentially reflecting a "primate pattern".

In the Han period, four primary clusters of Han elite 'lineage' style burials are spaced equally from the northern to the southern extent of the alluvial basin. As shown in Figure 9.2, the Han burial groups are located in Zhanyi, Qujing, Sanbao, and Yuezhou area, which are all positioned directly on the valley floor with 10 – 12 km separating each site. Only Sanbao, which is located in the narrower part of the valley, and Yuezhou are walled sites. According to historical records and the discovery of an inscribed stele from late 4th c. AD (爨宝子碑 *Cuan Baozi Bei*), Yuezhou was the administrative center in the Qujing region. While these observations of site distributions are very preliminary, it appears that during the post-conquest period, Batatai was located in equidistance to three Han elite grave groups (Zhanyi, Qujing, and Sanbao) while Hengdalu was adjacent to Yuezhou in the southern part of the valley. It is particularly interesting to note that with the exception of Yuezhou, no Han grave clusters have been documented on the west bank of the river in the northern half of the basin or in vicinity of Batatai. This observation

[2] Han census estimates in Hou Hanshu Chapter 86 do not list population counts for individual counties in Yizhou commandery. Based on Han census estimates taken at AD 2 (before the first major wave of Han southward migration), the population total for Yi commandery, which contained 24 counties, was 580,463 individuals (see De Crespigny 1990). Based on the average of these figures, each county is estimated to have had 24,186 individuals

suggests that the imperial and Batatai communities may have maintained spatial distances in enforcing some kind of cultural boundary.

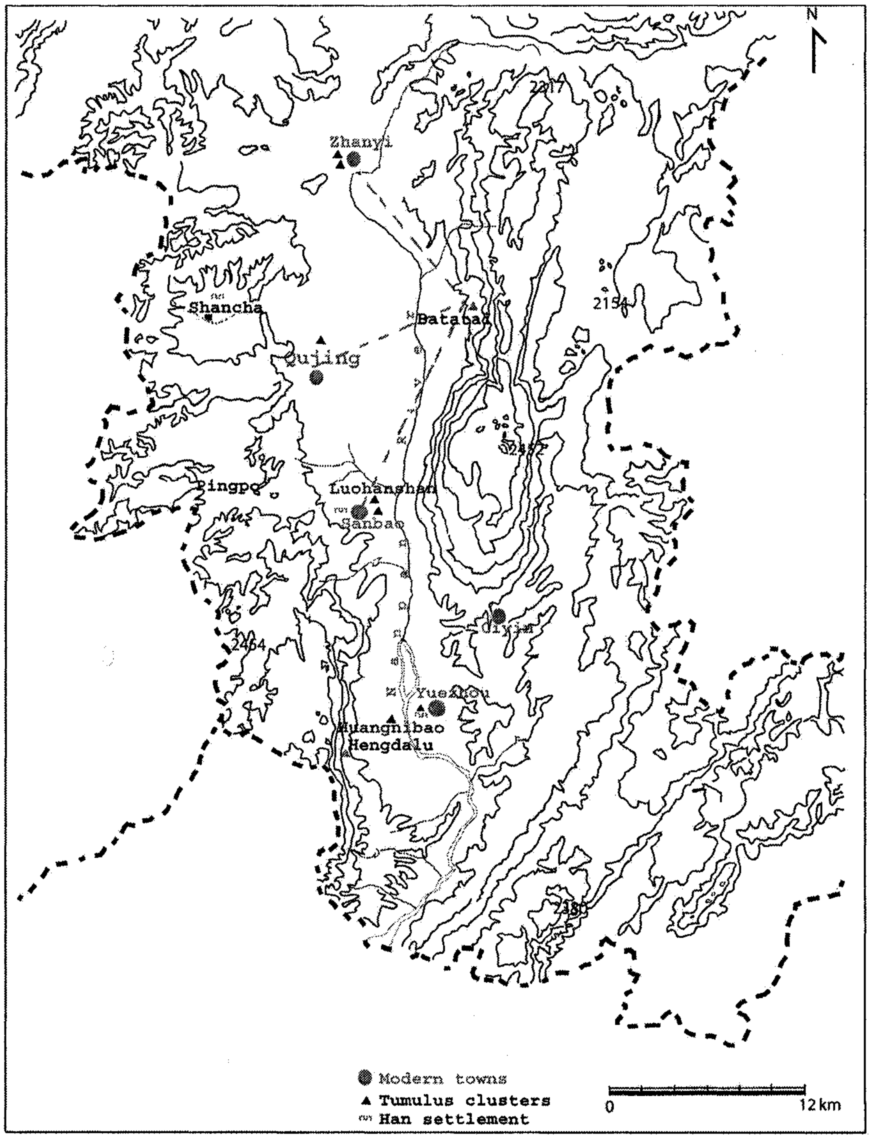


Figure 9.2. The locations of Han tumulus cluster sites relative to Batatai and Hengdalu.

Based on these preliminary observations on spatial trends, there are several possibilities to explain the patterns of culture change contrasting these two communities. The concentration of Han artifacts at Batatai in contrast to the paucity at Hengdalu is striking, especially given the proximity of Hengdalu to the Han county seat. While the distribution of Han artifacts and their inclusion in mortuary offering are two different phenomena, preliminary observations suggest this distribution varies independently of spatial proximity. Seventy-seven percent of Han bronze serving ware and 80.3% of iron

implements were concentrated at Batatai, while it is unclear if any Han items were associated with burials at Hengdalu (see tables 6.10 and 6.13). *This distribution pattern suggests a politically controlled economy where the largest and more complex site/community consumes the majority of Han produced goods. In contrast, smaller scale or subsidiary communities receive a decreasing order of the same exchanged items.*

Given the location of Batatai relative to the three elite Han grave clusters, one would expect the spatial distancing to be delineating formal boundaries. On the contrary, the proliferation of Han goods and their integration into Batatai mortuary ritual suggests increasing interdependence between local and imperial systems. Beyond merely adopting Han objects, some individuals actually incorporated the items to configure social status based on Han patterns of vertical differentiation. In other words, the nature of cultural exchange was more extensive than would be expected in an informal and infrequent kind of interaction. The Batatai community may have operated semi-independently from the imperial system as evidenced by the bronze seal in grave M69. Although local leadership continued to be communally recognized, the sociopolitical prominence of Batatai in the region and its favorable location on the alluvium may have implicated the community in the imperial system so intensively such that transcultural adaptations were inevitable. For instance, in seeking out a 'local' leader to expedite imperial administration in the borderlands, the Han strategy of provincial government sensibly sought collaboration with a local representative to mediate between local and Han parties. As discussed in chapter 3, this local agent ostensibly matching Han cultural ideals (agrarian based, settlements, and leadership). Based on Batatai's ideal location and existing social structure, Han imperial administration may have appealed to this Bronze Age community thus implicating it in imperial governance. The inclusion of iron weaponry at Batatai, in effect, reveals the extent of this political multilateralism. Iron weaponry and farm tools, according to Han texts, were only to be distributed to pacified subjects and allies.

In summary, the exploration of cultural patterns at the regional scale indicates that culture change in Qujing is not a uniform process where every community experiences Han incorporation in the same way. The variability in response depends on how the community is tied into the nexus of imperial system and on the intersection of individual

and group interests with the circumstances presented by the imperial system. For some, incorporation did little to alter longstanding mortuary practices. Han items were simply exchanged for material objects long in use (*replacement*). For other contemporary members, Han ritual elements signaled an attempt to create a hybridized style of burial (*addition*), one that figured into attempts on the part of the local elites to establish higher status both in their network and probably in the provincial order. And yet for others, the basic Han forms of grave offerings were deliberately excluded (*rejection*) in preference of existing bronze implements. The variability in responses – from transculturation to maintenance – largely reflected the social position and personal group affiliation of the dead.

Putting Batatai and Hengdalu in a comparative framework, this study finds that communities drawn into the provincial framework developed the most acute forms of cultural transformation. And above all else, the cultural transformation is contingent on existing social structures. Individual members with the highest social status tended to internalize and experiment with culture, suggesting that those with the greatest opportunities for acquiring social capital tended to take larger risks in social action. New opportunities provided by the provincial system thus met the inertia of local history, placing culture squarely in the foreground.

CONCLUSION

In concluding, I return to the enigma presented by the seal. Did this seal represent the acculturation of Bronze Age societies under Han incorporation as suggested by the historical narrative? Or, as betrayed by its odd appearance, something more complicated? What the dissertation uncovered is that the seal served not as a direct token of cultural adoption but was reflective of a trajectory of social change. In effect, this dissertation has de-coupled two dimensions of the research problem – one concerning the nature of *social change* and the second addressing how *culture* (the collectively recognized traditions and motivations) was re-configured into the structure of change. By taking a diachronically based approach, this study first identified the underlying social structure of the funerary ritual. Only with this knowledge could the transformations in the mortuary program following cultural contact be logically evaluated. In particular, the *emic* meanings of

foreign objects, the archaeological indices of culture identity, do not always signify cultural difference. Only by assessing foreign objects against the existing consumption system in the funerary ritual was this study able to determine the social significance of particular cultural appropriations.

The dissertation revealed that the communities living in the Qujing basin (900 BC – AD 100) showed wide variability in their response to Han incorporation. Contrary to conceptions of culture change as a macro-level phenomenon, this study showed that even within one circumscribed region, contrasting trajectories of culture change were produced at different social levels. The Hengdalu community experienced a truncation in existing horizontal and vertical dimensions of social organization but these social transformations were not entirely modeled on Han constructs. The Batatai community experienced an expansion of existing vertical structures that were partially modeled after Han patterns of economic differentiation but also an extension of existing local statuses. Certain individuals selectively appropriated Han objects concordant with expressing their local social statuses, while the most distinguished individual adopted Han metropolitan symbols to enhance personal status in a distinctly imperial context.

These general findings have broad implications for the anthropological study of culture change in the ancient world. The foremost of which is to re-cast the conception of culture change from a descriptive explanation based on prototyping *otherness* or becoming the other. Rather, culture change is about deploying culturally specific strategies in the mediation of social life under societal disruption. Given the multilateral nature of cross-cultural engagement, individuals will differentially appropriate 'foreign' cultural practices depending on the articulation of their social identities, positions, and group associations within emerging economic and political systems. Thus, the types of cultural transformations (*acculturation, transculturation, creolization, maintenance and resistance*) while contingent on the external factor (intensity of interaction) are even more dependent on the internal constraints. In instances of violent conquest and annihilation, local agency may be seriously limited such that societies are coerced to assimilate to imperial powers. In the Qujing case, however, the formation of provincial systems presented a multilateral framework where new opportunities expanded the range of

possible social actions but which were simultaneously constrained by the inertia of history as recalled in rituals.

Epilogue: the end of Bronze Age communities

Following Han conquest, the historical texts document a succession of local revolts that continuously disrupted Han rule in the Southwest into the 3rd century AD In the Qujing region (and in the Dian basin), local Bronze Age traditions disappear and the mound cemeteries are abandoned after the first century AD. These communities may have either migrated due to the regional instability described in the historical texts, or may have become incorporated into Han settlements in the valley (Sun and Xiong 1983). While current archaeological research cannot resolve this widespread regional transition, historical sources support the continuity of native groups in the Qujing region. The 南中 Nanzhong chapter in the 华阳国志 *Huayang Guozhi* (4th c. AD) documents the rise of locally prominent families of non-Han or possibly mixed origins who governed this region during the Eastern Jin Dynasty (317 - 420 AD). In Qujing, the 爨 Cuan family rose to prominence during this period, playing a central role in local administration. The 爨宝子碑 *Cuan Baozi bei* stele, in particular, extolled the virtues of a governor (*taishou*) from the Cuan family, whose just administration gained wide popular support (Fang 1987:245, Fan 1989:53-55). Using political rhetoric typical of elite Chinese eulogies, the stele lists the accomplishments of Cuan Baozi, who served as governor from the age of 19 until his death at 23.[3] In corroboration of this stele, Kleeman (1998) notes that the Nanzhong chapter also evidences an amelioration of imperial governance in this region noting the emergence of local officials whose just rule increasingly gained 'native' support. Based on these observations, it is possible that the Qujing region evolved as a self-administered unit where relations between 'native' subjects and provincial government likely characterized as a multilateral balancing act.

[3] www.ql.gov.cn/qlfm/lsww/20051102111-1.jsp. The youthful age of this individual and meteoric rise to the rank of *taishou* at the age of 19 is not typical. The dynastic dates on this stele do not match official Jin dates indicating a possible inscriptional error, which is rather unusual for someone at the governor rank.

Outstanding questions and future directions

The absence of settlement locations and excavations presents a major obstacle to this research and effectively defines the path of future work. Specifically, this dissertation operated on the assumption that the burial mounds represented the 'proxy' location of distinct Bronze Age communities. By extension, the comparative social disparities between these communities are used to intimate at the nature of political organization in this region. *Needless to say, without an understanding of settlement distributions and sizes, it is unclear if the Qujing basin hosted one integrated polity or a series of affiliated polities.* Could the basin actually be bisected by a northern and southern territorial polity? The ambiguity of the Han texts attests to both possibilities thus underscoring the need of settlement work to verify against the mortuary data.

Beyond addressing spatial dimensions, settlement data would provide a separate dimension of cultural production to evaluate the scope of 'native' and Han interactions. Specifically, investigations into settlement locations and land-use patterns could reveal different subsistence strategies that potentially distinguish a 'native' pattern of rice cultivation versus an intensified Han agricultural system. The implications from settlement and habitation contexts also detail the organization of domestic activities, which provide an important dimension for assessing the intensity of cross-cultural interaction (see Indrisano 2006). In effect, the domestic context permits an investigation into the degree of economic integration and structural dependency under imperial administration. Did households and villages continue to organize production and labor according to existing needs or were productive units configured into a Han hierarchical order? *This information would allow us to address? scales of cross-cultural exchange that do not necessarily figure into the mortuary domain.*

There are some directions of research that would be most productive for expanding the current study on Bronze Age societies. There is an immediate urgency for systematic investigations, from survey to formal site excavations, for all types of sites in this region. An understanding of the settlement organization will help identify distinct land-use patterns and subsistence regimes in the local prehistory. This reconstruction would contribute towards not only an understanding of 'native' and Han settlement

systems in this region but may extend the diachronic framework to include pre-bronze period communities. As mentioned throughout this dissertation, the historical texts are silent on such matters. The archaeological perspective can redress the current reliance on anachronistic historical descriptions.

Systematic archaeological survey and excavation, palynological studies based on a series of cores in the basin would enable a reconstruction of the long term environmental history of the region, from the initial arrival of rice cultivation in the Neolithic period (before c. 1500 BC) to the post-Han period. There is a paucity of basic knowledge about the prehistory of the Southwest region of China, which carries important insight into the regional dispersal of rice agriculture in Southern China. A major focus in the current research on rice in ancient China is investigation of regional variation in early rice crops and of the possible connections with Southeast Asia (Lu 1999). The identification of rice cultigens in this region can therefore contribute to a broader understanding of cultural exchanges in prehistory. And more importantly, the expansion of this archaeological work targets the most perplexing question concerning the prehistory of the Southwest region – the genesis of a distinct bronze tradition and the complex societies from where this dissertation picks up. The regional prologue eagerly awaits future discovery.

APPENDICES

Appendix 1: NNI test values for Hengdalu phase 1 - 3 burials

Phase1	Mean Nn distance	Expected Nn distance	Nn Index	2nd Order	3rdOrder	Sig. Level
Sample	1.2224	1.4801	0.8259	0.94486	0.94486	0.05
Test1	1.02	0.9859	1.0325	1.14264	1.11643	ns
Test2	1.0282	0.9821	1.04691	1.02906	1.04947	ns
Test3	0.9808	0.9906	0.99011	1.03312	1.05475	ns
Phase2						
Sample	1.2752	1.4746	0.86479	0.9279	1.01969	0.01
Test2	1.0008	0.9306	1.07541	1.14192	1.12093	0.1
Test3	1.0808	0.9331	1.15832	1.11497	1.0766	0.01
Phase3						
Sample	1.1749	1.4902	0.7884	0.80864	0.83348	0.0001
Test1	1.1278	1.0737	1.0504	1.08374	1.09471	ns
Test2	1.1846	1.0666	1.11066	1.09875	1.09934	0.01
Test3	1.1794	1.0635	1.10906	1.06691	1.10648	0.01

Appendix 2: Batatai Phase1

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	tripodSize	guan_jar	Lbk_A
M348	1	6	70	2.40	1.92	1.344	1.00	0.00	0		0	0
M347	1	6	82	2.30	1.38	0.690	1.00	0.00	0		0	0
M346	1	6	72	1.84	1.10	0.497	1.00	0.00	0		0	0
M345	1	6	71	2.20	1.10	0.440	1.00	1.00	0		0	0
M344	1	6		2.10	1.68	0.672	1.00	0.00	0		0	0
M343	1	6	80	2.00			2.00	0.00	0		0	0
M342	1	6	91	2.40			1.00	0.00	0		0	0
M341	1	6	82	2.20	1.76	0.616	1.00	0.00	0		0	0
M340	1	6	92	2.00	2.40	1.080	1.00	0.00	0		0	0
M339	1	6	82	2.30	1.50	1.047	1.00	0.00	0		0	0
M338	1	6	92	2.00	2.60	1.812	1.00	0.00	0		0	0
M337	1	6	90	2.40	1.92	0.768	2.00	0.00	0		0	0
M336	1	6	79	2.50	1.50	0.900	1.00	0.00	0		0	0
M335	1	6	84	2.40	3.36	2.352	1.00	0.00	0		0	0
M334	1	6	84	2.10	1.72	1.292	1.00	0.00	0		0	0
M333	1	6	82	2.26	1.63	0.976	1.00	0.00	0		0	0
M332	1	6	82	1.70	1.12	0.729	1.00	0.00	0		0	0
M331	1	6	80	1.56	1.06	0.690	1.00	1.00	0		0	0
M330	1	6	66	1.30	1.12		1.00	0.00	0		0	0
M329	1	6	78	1.30	0.62	0.218	1.00	0.00	0		0	0
M328	1	6	81	2.90	2.32	0.835	1.00	1.00	0		0	0
M327	1	6	86	1.80	1.30	0.388	1.00	0.00	0		0	0
M326	1	6		3.00	4.20	1.470	1.00	0.00	0		0	0
M325	1	6	86	2.90	2.32	0.928	1.00	1.00	0		0	0
M324	1	6	84	2.30	2.07	1.760	1.00	0.00	0		0	0
M323	1	6	85	2.70	2.43	2.187	1.00	0.00	0		0	0
M322	1	6	92	2.04	1.43	0.500	1.00	0.00	0		0	0
M321	1	6	86	2.20	1.63	0.488	1.00	1.00	0		0	0
M320	1	6	82	3.12	3.24	0.973	1.00	0.00	0		0	0
M319	1	6	78	2.50	1.50	0.300	1.00	0.00	0		0	0
M318	1	6	80	2.00	1.40	0.700	1.00	0.00	0		0	0
M317	1	6	84	2.40	1.92	0.768	1.00	0.00	0		0	0
M316	1	6	86	3.12	5.87	6.160	1.00	0.00	0		0	0
M315	1	6	72	2.10	1.34	0.968	1.00	0.00	0		0	0
M314	1	6					1.00	0.00	0		0	0
M313	1	6	72	2.20	1.65	0.413	1.00	0.00	0		0	0

Appendix 2: Batatai Phase1

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	TripodSize	guan_jar	Lbk_A
M312	1	6	80	2.20	1.76	0.528	1.00	0.00	0		0	0
M311	1	6	82	3.00	2.10	1.260	1.00	0.00	0		0	0
M310	1	6	72	1.50	0.75	0.263	1.00	0.00	0		0	0
M309	1	6	72	1.90	1.22	0.790	1.00	0.00	0		0	0
M308	1	6	76	2.60	1.66	0.582	1.00	0.00	0		0	0
M307	1	6	76	2.10	1.55	0.233	1.00	0.00	0		0	0
M306	1	6	73	2.10	1.47	0.735	1.00	2.00	0		0	0
M305	1	6	73	2.00	1.64	0.491	1.00	0.00	0		0	0
M304	1	6	86	2.40	1.82	0.912	2.00	1.00	0		0	0
M303	1	6	71	3.00	2.40	3.240	1.00	0.00	0		0	0
M302	1	6	81	2.26	1.49	0.671	1.00	0.00	0		0	0
M301	1	6	78	2.20	1.76	1.496	1.00	1.00	0		0	0
M300	1	6	78	2.40	1.54	1.766	1.00	0.00	0		0	0
M299	1	6	72	2.10	1.30	1.107	1.00	0.00	0		0	0
M297	1	6	80	1.90	0.95	0.333	2.00	0.00	0		0	0
M296	1	6	66	2.10	1.22	0.183	1.00	2.00	0		0	1
M295	1	6	80	2.40	1.92	0.480	1.00	0.00	0		0	0
M294	1	6	75	2.15	0.67	0.688	1.00	0.00	0		0	0
M293	1	6	72	2.60	2.34	0.819	1.00	0.00	0		0	0
M292	1	6	72	2.20	1.32	0.528	1.00	0.00	0		0	0
M291	1	6	84	2.25	1.80	0.900	1.00	0.00	0		0	0
M290	1	6	82	2.20	1.54	0.539	1.00	1.00	1	MediumCarir	0	0
M289	1	6	79	3.50	5.88	6.174	1.00	1.00	0		0	0
M288	1	6	83	2.10	1.39	0.333	1.00	1.00	0		0	0
M287	1	6	78	2.50	2.10	0.588	1.00	1.00	0		0	0
M286	1	6	82	2.30	1.61	0.564	1.00	0.00	0		0	0
M285	1	6	75	2.50	2.81	0.702	1.00	1.00	0		0	0
M283	1	6	80	1.80	1.08	0.540	1.00	0.00	0		0	0
M282	1	6	80	2.50	1.50	0.750	1.00	1.00	0		0	0
M281	1	6	80	2.50	2.00	1.120	1.00	0.00	0		0	0
M280	1	6	86	3.50	6.44	4.186	2.00	3.00	1	Medium	1	2
M279	1	6	87	3.00	4.05	1.823	2.00	3.00	1	Large	1	1
M278	1	6	86	2.20	1.32	0.792	2.00	0.00	0		0	0
M276		6	86				2.00	0.00	0		0	0
M276	1	6	86				1.00	1.00	0		0	0
M275	1	6	76	3.60	6.12	7.040	1.00	2.00	0		0	1

Appendix 2: Batatai Phase1

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	TripodSize	guan_jar	Lbk_A
M273	1	6	84	3.00	3.60	1.620	1.00	0.00	0		0	0
M255	1	6	70	2.40	2.88	1.440	1.00	0.00	0		0	0
M231	1	6	78	2.50	1.63	0.813	1.00	0.00	0		0	0

Appendix 2: Batatai Phase1

burial	Lbk_B	plate	Bze_round_sword	sword_sheath	swordtype	Bze_blade	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_armor
M348	0	0	0	0		0		0		0	0
M347	0	0	0	0		0		0		0	0
M346	0	0	0	0		0		0		0	0
M345	0	0	0	0		1	1	0		0	0
M344	0	0	0	0		0		0		0	0
M343	0	0	0	0		0		0		0	0
M342	0	0	0	0		0		0		0	0
M341	0	0	0	0		0		0		0	0
M340	0	0	0	0		0		0		0	0
M339	0	0	0	0		0		0		0	0
M338	0	0	0	0		0		0		0	0
M337	0	0	0	0		0		0		0	0
M336	0	0	0	0		0		0		0	0
M335	0	0	0	0		0		0		0	0
M334	0	0	0	0		0		0		0	0
M333	0	0	0	0		0		0		0	0
M332	0	0	0	0		0		0		0	0
M331	0	0	0	0		0		0		0	0
M330	0	0	0	0		0		0		0	0
M329	0	0	0	0		0		0		0	0
M328	0	0	0	0		1	1	0		0	0
M327	0	0	0	0		0		0		0	0
M326	0	0	0	0		0		0		0	0
M325	0	0	0	0		1	1	1	2	0	0
M324	0	0	0	0		0		0		0	0
M323	0	0	0	0		0		0		0	0
M322	0	0	0	0		0		0		0	0
M321	0	0	0	0		0		0		0	0
M320	0	0	0	0		0		0		0	0
M319	0	0	0	0		0		0		0	0
M318	0	0	0	0		0		0		0	0
M317	0	0	0	0		0		0		0	0
M316	0	0	0	0		0		0		0	0
M315	0	0	0	0		0		0		0	0
M314	0	0	0	0		0		0		0	0
M313	0	0	0	0		0		0		0	0

Appendix 2: Batatai Phase1

burial	Lbk_B	plate	Bze_round_sword	sword_sheath	swordtype	Bze_blade	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_armor
M312	0	0	0	0		0		0		0	0
M311	0	0	0	0		0		0		0	0
M310	0	0	0	0		0		0		0	0
M309	0	0	0	0		0		0		0	0
M308	0	0	0	0		0		0		0	0
M307	0	0	0	0		0		0		0	0
M306	0	0	0	0		0		1	2	0	0
M305	0	0	0	0		0		0		0	0
M304	0	0	0	0		0		0		0	0
M303	0	0	0	0		0		0		0	0
M302	0	0	0	0		0		0		0	0
M301	0	0	0	0		0		0		0	0
M300	0	0	0	0		0		0		0	0
M299	0	0	0	0		0		0		0	0
M297	0	0	0	0		0		0		0	0
M296	0	0	0	0		1	1	1	2	0	0
M295	0	0	0	0		0		0		0	0
M294	0	0	0	0		0		0		0	0
M293	0	0	0	0		0		0		0	0
M292	0	0	0	0		0		0		0	0
M291	0	0	0	0		0		0		0	0
M290	0	0	0	0		0		0		0	0
M289	0	0	0	0		0		0		0	0
M288	0	0	0	0		0		0		0	0
M287	0	0	0	0		0		0		0	0
M286	0	0	0	0		0		0		0	0
M285	0	0	1	0	1	0		1	2	0	0
M283	0	0	0	0		0		0		0	0
M282	0	1	0	0		0		0		0	0
M281	0	0	0	0		0		0		0	0
M280	0	0	1	0	1	0		1	2	0	0
M279	2	4	1	1	1	0		1	2	1	1
M278	0	0	0	0		0		0		0	0
M276	0	0	0	0	0		0		0		0
M276	0	0	0	0		0		0		0	0
M275	0	0	1	0	1	0		1	2	0	0

Appendix 2: Batatai Phase1

burial	Lbk_B	plate	bronze_round_sword	sword_sheath	swordtype	Bze_blade	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_armor
M273	0	0	0	0		0		0		0	0
M255	0	0	0	0		0		0		0	0
M231	0	0	0	0		0		0		0	0

Appendix 2: Batatai Phase1

burial	Bze_animalbuckle	Bze_snakefootbit	bronzeKG	KGclass	jade_ear_disk	le_eardisk_type	jade_tube_beads
M348	0	0	0.000	1.00	0		0
M347	0	0	0.000	1.00	0		0
M346	0	0	0.000	1.00	0		0
M345	0	0	0.000	1.00	0		0
M344	0	0	0.096	2.00	0		0
M343	0	0	0.000	1.00	0		0
M342	0	0	0.000	1.00	0		0
M341	0	0	0.000	1.00	0		0
M340	0	0	0.000	1.00	0		0
M339	0	0	0.000	1.00	0		0
M338	0	0	0.000	1.00	0		0
M337	0	0	0.000	1.00	0		0
M336	0	0	0.000	1.00	0		0
M335	0	0	0.000	1.00	0		0
M334	0	0	0.000	1.00	0		0
M333	0	0	0.000	1.00	0		0
M332	0	0	0.000	1.00	0		0
M331	0	0	0.000	1.00	1	S	0
M330	0	0	0.000	1.00	0		0
M329	0	0	0.000	1.00	0		0
M328	0	0	0.082	2.00	0		0
M327	0	0	0.000	1.00	0		0
M326	0	0	0.000	1.00	0		0
M325	0	0	0.204	2.00	0		0
M324	0	0	0.000	1.00	0		0
M323	0	0	0.000	1.00	0		0
M322	0	0	0.000	1.00	0		0
M321	0	1	0.200	2.00	0		0
M320	0	0	0.000	1.00	0		0
M319	0	0	0.000	1.00	0		0
M318	0	0	0.000	1.00	0		0
M317	0	0	0.000	1.00	0		0
M316	0	0	0.000	1.00	0		0
M315	0	0	0.000	1.00	0		0
M314	0	0	0.000	1.00	0		0
M313	0	0	0.000	1.00	0		0

Appendix 2: Batatai Phase1

burial	Bze_animalbuckle	Bze_snakefootbit	bronzeKG	KGclass	jade_ear_disk	le_eardisk_type	jade_tube_beads
M312	0	0	0.000	1.00	0		0
M311	0	0	0.000	1.00	0		0
M310	0	0	0.000	1.00	0		0
M309	0	0	0.000	1.00	0		0
M308	0	0	0.000	1.00	0		0
M307	0	0	0.000	1.00	0		0
M306	0	0	0.106	2.00	2	L	0
M305	0	0	0.000	1.00	0		0
M304	0	0	0.000	1.00	1	L	0
M303	0	0	0.000	1.00	0		0
M302	0	0	0.000	1.00	0		0
M301	0	0	0.000	1.00	4	M	0
M300	0	0	0.000	1.00	0		0
M299	0	0	0.000	1.00	0		0
M297	0	0	0.000	1.00	0		0
M296	0	0	0.216	2.00	1	S	2
M295	0	0	0.000	1.00	0		0
M294	0	0	0.000	1.00	0		0
M293	0	0	0.000	1.00	0		0
M292	0	0	0.000	1.00	0		0
M291	0	0	0.000	1.00	0		0
M290	0	0	0.000	1.00	0		0
M289	0	0	0.000	1.00	2	L	0
M288	0	0	0.000	1.00	3	MS	0
M287	0	0	0.000	1.00	0		3
M286	0	0	0.000	1.00	0		0
M285	0	0	0.364	2.00	0		0
M283	0	0	0.000	1.00	0		0
M282	0	0	0.000	1.00	0		0
M281	0	0	0.000	1.00	0		0
M280	0	1	0.504	3.00	0		0
M279	1	1	1.112	4.00	0		0
M278	0	0	0.000	1.00	0		0
M276	0		0.000	1.00	0	0	0
M276	0	0	0.000	1.00	6	M	0
M275	0	0	0.256	2.00	0		0

Appendix 2: Batatai Phase1

burial	Bze_animalbuckle	Bze_snakefootbit	bronzeKG	KGclass	jade_ear_disk	le_eardisk_type	jade_tube_beads
M273	0	0	0.000	1.00	0		0
M255	0	0	0.000	1.00	0		0
M231	0	0	0.000	1.00	0		0

Appendix 3: Batatai Phase 2

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	TripodSize	guan_jar	guanlid
M298	2	6	79	2.70	1.84	0.422	1.00	0.00	0		0	0
M284	2	6	73	2.50	2.75	3.990	1.00	0.00	0		0	0
M277	2	6	74	2.34	1.36	0.204	1.00	0.00	0		0	0
M274	2	6	80	2.20	1.98	1.485	1.00	0.00	0		0	0
M272	2	6	86	2.00	1.28	0.576	1.00	0.00	0		0	0
M271	2	6	84	2.60	1.56	0.624	1.00	1.00	0		0	0
M270	2	6	86	2.20	1.54	0.616	1.00	0.00	0		0	0
M269	2	6	86	2.00	1.20	0.600	1.00	0.00	0		0	0
M268	2	6	81	2.24	1.84	0.735	1.00	2.00	2	Medium	1	0
M267	2	6	92	2.40	1.25	1.685	1.00	0.00	0		0	0
M266	2	6	76	2.40	1.20	0.240	1.00	1.00	0		0	0
M265	2	6	82	3.70	5.50	6.105	2.00	3.00	5	Medium	4	1
M264	2	6	88	2.00	1.40	0.560	1.00	0.00	0		0	0
M263	2	6	96	2.00	1.40	0.560	1.00	0.00	0		0	0
M262	2	6	92	2.38	1.71	0.514	1.00	0.00	0		0	0
M261	2	6	74	2.00	1.48	1.347	1.00	2.00	1	Medium	0	0
M260	2	6	86	2.30	2.53	1.012	1.00	0.00	0		0	0
M259	2	6	80	1.80	0.90	0.630	1.00	0.00	0		0	0
M258	2	6	86	2.20	1.98	1.980	1.00	0.00	0		0	0
M257	2	6	70	1.80	1.44	1.152	1.00	0.00	0		0	0
M256	2	6	86	2.50	1.50	1.200	1.00	0.00	0		0	0
M254	2	6	80	2.10	1.26	0.315	1.00	0.00	0		0	0
M253	2	6	80	1.90	1.33	0.333	1.00	0.00	0		0	0
M252	2	6	82	2.70	1.35	0.338	1.00	0.00	0		0	0
M251	2	6	80	1.60	0.86	0.242	1.00	0.00	0		0	0
M250	2	6	83	2.00	1.60	0.384	1.00	0.00	0		0	0
M249	2	6	84	2.60	1.82	0.910	1.00	0.00	0		0	0
M248	2	6	78	2.90	1.89	0.754	1.00	0.00	0		0	0
M247	2	6	97	2.30	1.61	0.322	1.00	0.00	0		0	0
M246	2	6	82	2.30	1.84	0.276	1.00	3.00	2	Large	0	0
M245	2	6	90	1.90	1.33	0.532	1.00	0.00	0		0	0
M244	2	6	88	2.30	1.43	0.285	1.00	0.00	0		0	0
M243	2	6		2.40	1.49	0.179	1.00	2.00	0		0	0
M242	2	6	80	2.60	3.07	1.092	1.00	1.00	1	MediumCarin	1	1
M241	2	6	90	2.50	2.00	0.800	1.00	2.00	0		2	0
M240	2	6	82	2.40	2.26	1.178	1.00	0.00	0		0	0

Appendix 3: Batatai Phase 2

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	TripodSize	guan_jar	guanlid
M239	2	6	80	2.50	2.00	0.740	1.00	0.00	0		0	0
M238	2	6	88	2.24	1.79	0.287	1.00	0.00	0		0	0
M237	2	6	90	2.16	1.73	0.346	1.00	0.00	0		0	0
M236	2	6	72	2.20	1.85	0.776	1.00	0.00	0		0	0
M235	2	6	78	2.64	2.22	0.776	1.00	0.00	0		0	0
M234	2	6	71	1.30	0.91	0.319	1.00	0.00	0		0	0
M233	2	6	94	1.80	1.44	0.360	1.00	0.00	0		0	0
M232	2	6	85	2.50	2.20	1.540	1.00	0.00	0		0	0
M230	2	6	80	1.80	1.26	0.756	1.00	0.00	0		0	0
M229	2	6	80	2.30	1.66	0.331	1.00	2.00	0		0	0
M228	2	6	80	2.40	1.92	0.614	1.00	0.00	0		0	0
M227	2	6	73	2.40	2.26	0.677	1.00	1.00	1	MediumCarin	1	0
M226	2	6	83	2.10	1.68	0.571	1.00	2.00	0		0	0
M225	2	6	88	2.10	1.30	0.807	1.00	1.00	0		0	0
M224	2	6	85	2.20	1.54	0.493	1.00	1.00	0		0	0
M223	2	6	93	2.10	1.60	0.400	1.00	0.00	0		0	0
M222	2	6	90	2.60	2.08	1.227	1.00	0.00	0		0	0
M221	2	6	90	2.70	2.16	0.367	1.00	0.00	0		0	0
M220	2	5	80	2.40	1.92	2.112	1.00	0.00	0		0	0
M219	2	5	88	2.50	2.00	1.900	2.00	2.00	0		0	0
M218	2	5	94	2.40	1.34	0.188	1.00	1.00	0		0	0
M217	2	5	80	2.40	2.40	1.320	1.00	0.00	0		0	0
M215	2	5	90	2.24	1.34	0.470	1.00	0.00	0		0	0
M214	2	5	76	2.30	1.61	0.805	1.00	0.00	0		0	0
M213	2	5	80	2.45	2.21	0.331	1.00	1.00	0		0	0
M212	2	5	78	2.70	2.16	1.080	1.00	0.00	0		0	0
M211	2	5	80	2.40	1.92	0.576	1.00	1.00	0		0	0
M209	2	5	88	2.35	1.29	0.155	1.00	1.00	0		0	0
M208	2	5	92	2.30			2.00	1.00	0		0	0
M207	2	5	80	1.80	1.80	0.390	1.00	1.00	1	Large	1	1
M206	2	5	74	3.26	4.89	2.934	1.00	3.00	1	MediumCarin	3	1
M205	2	5	80	2.00	1.20		1.00	2.00	1	Medium	1	0
M203	2	5	70	2.60	2.83	0.850	1.00	2.00	1	Medium	1	1
M202	2	5	88	2.00	1.26	0.126	1.00	1.00	0		0	0
M200	2	5	92	1.80	1.44	0.288	1.00	1.00	0		0	0
M191	2	5	90	3.00	2.40	1.800	2.00	1.00	0		0	0

Appendix 3: Batatai Phase 2

burial	excv_period	season	orientation	gravelength	area	volume	tombtype	categories	tripod	TripodSize	guan_jar	guanlid
M190	2	5	92	2.16	1.64		1.00	0.00	0		0	0

Appendix 3: Batatai Phase 2

burial	Lbk_A	Lbk_B	Hu_jar	globular_jar	cup_jar	plate	ceramics	Bze_round_sword	sword_sheath	swordtype	Bze_blade
M298	0	0	0	0	0	0	0	0	0		0
M284	0	0	0	0	0	0	0	0	0		0
M277	0	0	0	0	0	0	0	0	0		0
M274	0	0	0	0	0	0	0	0	0		0
M272	0	0	0	0	0	0	0	0	0		0
M271	0	0	0	0	0	0	0	0	0		0
M270	0	0	0	0	0	0	0	0	0		0
M269	0	0	0	0	0	0	0	0	0		0
M268	1	2	0	0	0	1	7	0	0		0
M267	0	0	0	0	0	0	0	0	0		0
M266	0	0	0	0	0	0	0	0	0		1
M265	5	2	0	0	0	8	25	1	0	1	0
M264	0	0	0	0	0	0	0	0	0		0
M263	0	0	0	0	0	0	0	0	0		0
M262	0	0	0	0	0	0	0	0	0		0
M261	0	0	0	0	0	0	1	0	0		1
M260	0	0	0	0	0	0	0	0	0		0
M259	0	0	0	0	0	0	0	0	0		0
M258	0	0	0	0	0	0	0	0	0		0
M257	0	0	0	0	0	0	0	0	0		0
M256	0	0	0	0	0	0	0	0	0		0
M254	0	0	0	0	0	0	0	0	0		0
M253	0	0	0	0	0	0	0	0	0		0
M252	0	0	0	0	0	0	0	0	0		0
M251	0	0	0	0	0	0	0	0	0		0
M250	0	0	0	0	0	0	0	0	0		0
M249	0	0	0	0	0	0	0	0	0		0
M248	0	0	0	0	0	0	0	0	0		0
M247	0	0	0	0	0	0	0	0	0		0
M246	0	1	0	0	0	1	4	0	1	1	0
M245	0	0	0	0	0	0	0	0	0		0
M244	0	0	0	0	0	0	0	0	0		0
M243	0	0	0	0	0	0	0	0	0		1
M242	0	0	0	0	1	3	6	0	0		0
M241	2	0	0	0	0	2	6	0	0		0
M240	0	0	0	0	0	0	0	0	0		0

Appendix 3: Batatai Phase 2

burial	Lbk_A	Lbk_B	Hu_jar	globular_jar	cup_jar	plate	ceramics	Bze_round_sword	sword_sheath	swordtype	Bze_blade
M239	0	0	0	0	0	0	0	0	0		0
M238	0	0	0	0	0	0	0	0	0		0
M237	0	0	0	0	0	0	0	0	0		0
M236	0	0	0	0	0	0	0	0	0		0
M235	0	0	0	0	0	0	0	0	0		0
M234	0	0	0	0	0	0	0	0	0		0
M233	0	0	0	0	0	0	0	0	0		0
M232	0	0	0	0	0	0	0	0	0		0
M230	0	0	0	0	0	0	0	0	0		0
M229	0	0	0	0	0	0	0	0	0		2
M228	0	0	0	0	0	0	0	0	0		0
M227	1	0	0	0	0	0	3	0	0		0
M226	0	0	0	0	0	0	0	0	0		0
M225	0	0	0	0	0	0	0	1	0		0
M224	0	0	0	0	0	0	0	0	0		1
M223	0	0	0	0	0	0	0	0	0		0
M222	0	0	0	0	0	0	0	0	0		0
M221	0	0	0	0	0	0	0	0	0		0
M220	0	0	0	0	0	0	0	0	0		0
M219	0	0	0	0	0	0	0	1	1	1	0
M218	0	0	0	0	0	0	0	0	0		1
M217	0	0	0	0	0	0	0	0	0		0
M215	0	0	0	0	0	0	0	0	0		0
M214	0	0	0	0	0	0	0	0	0		0
M213	0	0	0	0	0	0	0	1	0	1	0
M212	0	0	0	0	0	0	0	0	0		0
M211	0	0	0	0	0	0	0	0	0		1
M209	0	0	0	0	0	0	0	1	0	1	0
M208	0	0	0	0	0	0	0	0	0		1
M207	1	0	0	0	0	4	7	0	0		0
M206	1	0	0	1	0	1	7	1	0	1	0
M205	1	0	0	0	0	2	5	1	0	1	0
M203	2	0	0	0	1	1	6	0	0		0
M202	0	0	0	0	0	0	0	0	0		1
M200	0	0	0	0	0	0	0	0	0		0
M191	0	0	0	0	0	0	0	0	0		1

Appendix 3: Batatai Phase 2

burial	Lbk_A	Lbk_B	Hu_jar	globular_jar	cup_jar	plate	ceramics	Bze_round_sword	sword_sheath	swordtype	Bze_blade
M190	0	0	0	0	0	0	0	0	0		0

Appendix 3: Batatai Phase 2

burial	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_knife	knifetype	Bze_cauldron	Bze_animalbuckle	total_buckle	sheet_bits
M298		0		0	0		0	0	0	0
M284		0		0	0		0	0	0	0
M277		0		0	0		0	0	0	0
M274		0		0	0		0	0	0	0
M272		0		0	0		0	0	0	0
M271		1	2	0	0		0	0	0	0
M270		0		0	0		0	0	0	0
M269		0		0	0		0	0	0	0
M268		0		0	0		0	0	0	0
M267		0		0	0		0	0	0	0
M266	2	1	2	0	0		0	0	0	0
M265		1	2	0	1	1	1	1	0	0
M264		0		0	0		0	0	0	0
M263		0		0	0		0	0	0	0
M262		0		0	0		0	0	0	0
M261	3	1	2	0	0		0	0	0	0
M260		0		0	0		0	0	0	0
M259		0		0	0		0	0	0	0
M258		0		0	0		0	0	0	0
M257		0		0	0		0	0	0	0
M256		0		0	0		0	0	0	0
M254		0		0	0		0	0	0	0
M253		0		0	0		0	0	0	0
M252		0		0	0		0	0	0	0
M251		0		0	0		0	0	0	0
M250		0		0	0		0	0	0	0
M249		0		0	0		0	0	0	0
M248		0		0	0		0	0	0	0
M247		0		0	0		0	0	0	0
M246		1	2	0	0		0	1	1	0
M245		0		0	0		0	0	0	0
M244		0		0	0		0	0	0	0
M243	3	1	2	0	0		0	0	0	1
M242		0		0	0		0	0	0	0
M241		0		0	0		0	0	0	0
M240		0		0	0		0	0	0	0

Appendix 3: Batatai Phase 2

burial	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_knife	knifetype	Bze_cauldron	Bze_animalbuckle	total_buckle	sheet_bits
M239		0		0	0		0	0	0	0
M238		0		0	0		0	0	0	0
M237		0		0	0		0	0	0	0
M236		0		0	0		0	0	0	0
M235		0		0	0		0	0	0	0
M234		0		0	0		0	0	0	0
M233		0		0	0		0	0	0	0
M232		0		0	0		0	0	0	0
M230		0		0	0		0	0	0	0
M229	2	1	2	0	0		0	0	0	0
M228		0		0	0		0	0	0	0
M227		0		0	0		0	0	0	0
M226		0		0	1	1	0	0	0	0
M225		1	2	0	0		0	0	0	0
M224	3	1	2	0	0		0	0	0	0
M223		0		0	0		0	0	0	0
M222		0		0	0		0	0	0	0
M221		0		0	0		0	0	0	0
M220		0		0	0		0	0	0	0
M219		1	2	0	1	1	0	1	1	0
M218	2	1	2	0	0		0	0	0	0
M217		0		0	0		0	0	0	0
M215		0		0	0		0	0	0	0
M214		0		0	0		0	0	0	0
M213		2	2	0	0		0	0	0	0
M212		0		0	0		0	0	0	0
M211	3	1	2	0	0		0	0	0	0
M209		1	2	0	0		0	0	0	0
M208	3	1	2	0	0		0	0	0	0
M207		0		0	0		0	0	0	0
M206		1	2	1	1	1	0	0	0	1
M205		1	2	0	0		0	0	0	0
M203		0		0	0		0	0	0	1
M202	3	1	2	0	0		0	0	0	0
M200		0		0	1	1	0	0	0	0
M191	2	1	2	0	0		0	0	0	0

Appendix 3: Batatai Phase 2

burial	bladetype	Bzehalberd	halberdtype	Bzequiver	Bze_knife	knifetype	Bze_cauldron	Bze_animalbuckle	total_buckle	sheet_bits
M190		0		0	0		0	0	0	0

Appendix 3: Batatai Phase 2

burial	concentric_bit	total_bits	bronzeKG	Kgclass	jade_bangle	jade_ear_disk	eardisk_type	jade beads	
M298	0	0	0.000		0	0		0	
M284	0	0	0.000	1.00	0	0		0	
M277	0	0	0.000		0	0		0	
M274	0	0	0.000	1.00	0	0		0	
M272	0	0	0.000		0	0		0	
M271	0	0	0.156	2.00	0	0		0	
M270	0	0	0.000		0	0		0	
M269	0	0	0.000		0	0		0	
M268	0	0	0.000		0	2	L	0	
M267	0	0	0.000	1.00	0	0		0	
M266	0	0	0.204	2.00	0	0		0	
M265	0	0	1.500	4.00	1	1	L	0	
M264	0	0	0.000		0	0		0	
M263	0	0	0.000		0	0		0	
M262	0	0	0.000		0	0		0	
M261	0	0	0.310	2.00	0	0		0	
M260	0	0	0.000		0	0		0	
M259	0	0	0.000		0	0		0	
M258	0	0	0.000	1.00	0	0		0	
M257	0	0	0.000		0	0		0	
M256	0	0	0.000	1.00	0	0		0	
M254	0	0	0.000		0	0		0	
M253	0	0	0.000		0	0		0	
M252	0	0	0.000		0	0		0	
M251	0	0	0.000		0	0		0	
M250	0	0	0.000		0	0		0	
M249	0	0	0.000		0	0		0	
M248	0	0	0.000		0	0		0	
M247	0	0	0.000		0	0		0	
M246	0	0	0.720	3.00	0	0		0	
M245	0	0	0.000		0	0		0	
M244	0	0	0.000		0	0		0	
M243	0	1	0.318	2.00	0	0		0	
M242	0	0	0.000		0	0		0	
M241	0	2	0.000		0	0		0	
M240	0	0	0.000	1.00	0	0		0	

Appendix 3: Batatai Phase 2

burial	concentric_bit	total_bits	bronzeKG	Kgclass	jade_bangle	jade_ear_disk	eardisk_type	jade beads	
M239	0	0	0.000		0	0		0	
M238	0	0	0.000		0	0		0	
M237	0	0	0.000		0	0		0	
M236	0	0	0.000		0	0		0	
M235	0	0	0.000		0	0		0	
M234	0	0	0.000		0	0		0	
M233	0	0	0.000		0	0		0	
M232	0	0	0.000	1.00	0	0		0	
M230	0	0	0.000		0	0		0	
M229	0	0	1.098	4.00	0	0		0	
M228	0	0	0.000		0	0		0	
M227	0	0	0.000		0	0		0	
M226	0	0	0.014	2.00	2	7	MS	2	
M225	0	0	0.266	2.00	0	0		0	
M224	0	0	0.478	3.00	0	0		0	
M223	0	0	0.000		0	0		0	
M222	0	0	0.000	1.00	0	0		0	
M221	0	0	0.000		0	0		0	
M220	0	0	0.000	1.00	0	0		0	
M219	2	2	0.682	3.00	0	0		0	
M218	0	0	0.370	2.00	0	0		0	
M217	0	0	0.000	1.00	0	0		0	
M215	0	0	0.000		0	0		0	
M214	0	0	0.000		0	0		0	
M213	0	0	0.556	3.00	0	0		0	
M212	0	0	0.000		0	0		0	
M211	0	0	0.264	2.00	0	0		0	
M209	0	0	0.472	3.00	0	0		0	
M208	0	0	0.256	2.00	0	0		0	
M207	0	0	0.000		0	0		0	
M206	0	1	1.282	4.00	0	1	S	0	
M205	0	0	0.224	2.00	0	0		0	
M203	0	1	0.000		0	0		0	
M202	0	0	0.378	2.00	0	0		0	
M200	0	0	0.038	2.00	0	0		0	
M191	0	0	0.248	2.00	0	0		0	

Appendix 3: Batatai Phase 2

burial	concentric_bit	total_bits	bronzeKG	Kgclass	jade_bangle	jade_ear_disk	eardisk_type	jade beads	
M190	0	0	0.000		0	0		0	

Appendix 4: Batatai Phase 3

burial	excv_period	season	orientation	gravelength	area	volume	tombsize	tombtype	categories	tripodSize
M151	3	4	77	2.40	1.44	1.30	1.00	1.00	1.00	
M152	3	4	85	2.10	1.37	0.89	1.00	1.00	0.00	
M153	3	4	80	1.80	1.17	0.23	1.00	1.00	1.00	
M154	3	4	54	1.70	1.53	0.77	1.00	1.00	2.00	
M155	3	4						1.00	0.00	
M156	3	4						1.00	1.00	
M157	3	4						1.00	0.00	
M158	3	4	75	2.00	3.20	2.88	2.00	1.00	3.00	
M159	3	4						1.00	0.00	
M160	3	4	81	2.74	3.28	1.97	2.00	1.00	1.00	
M161	3	4		2.10	2.10	0.84	1.00	1.00	1.00	
M162	3	4	70	2.10	1.58	1.73	1.00	1.00	1.00	Medium
M163	3	4	100	2.30	3.54	2.37	2.00	1.00	1.00	Medium
M164	3	4	80	2.00	1.00	0.45	1.00	1.00	1.00	
M165	3	4	95	2.20	1.63	0.49	1.00	1.00	2.00	Medium
M166	3	4						1.00	1.00	
M167	3	4	60	1.62	1.10	0.28	1.00	1.00	1.00	
M168	3	4	88	2.10	1.47	0.88	1.00	1.00	1.00	
M169	3	4	75	2.00	1.60		1.00	1.00	1.00	
M170	3	4	70	2.00	1.40	0.28	1.00	1.00	1.00	
M171	3	4	66	2.40	1.49	1.12	1.00	1.00	0.00	
M172	3	4	72	1.84	1.29	0.72	1.00	1.00	0.00	
M173	3	4	75	2.50	2.50	2.00	1.00	1.00	0.00	
M174	3	4	86	2.10	1.53	0.60	1.00	1.00	1.00	
M175	3	4	75	2.50	2.00	1.60	1.00	1.00	1.00	
M176	3	4	82	2.00	1.60	1.68	1.00	1.00	2.00	
M177	3	4	90	2.10	1.58	1.34	1.00	1.00	0.00	
M178	3	4	90	3.00	3.60	4.32	2.00	1.00	3.00	
M179	3	4	85	2.80	2.80	2.52	2.00	1.00	1.00	
M180	3	5	60	2.40	1.73	1.04	1.00	1.00	2.00	
M181	3	5	70	1.93	1.64		1.00	2.00	3.00	Large
M182	3	5	60	1.30	0.59		1.00	1.00	1.00	
M183	3	5	82	3.60	6.12	2.14	3.00	2.00	3.00	Jumbo
M184	3	5	68	2.30	1.84	0.37	1.00	1.00	1.00	
M185	3	5	62	2.40	2.40	0.36	1.00	1.00	1.00	
M186	3	5	90	1.40	0.70		1.00	1.00	2.00	

Appendix 4: Batatai Phase 3

burial	excv_period	season	orientation	gravelength	area	volume	tombsize	tombtype	categories	tripodSize
M187	3	5	80	2.40	1.92		1.00	2.00	1.00	
M188	3	5	76	2.45	1.96		1.00	1.00	1.00	
M189	3	5	88	1.25	1.25		1.00	1.00	0.00	
M192	3	5	116		17.48	13.98		1.00	2.00	
M193	3	5	80	2.40	1.92		1.00	1.00	0.00	
M194	3	5	86	2.20	1.54		1.00	1.00	1.00	
M195	3	5	72	2.46	1.48		1.00	1.00	0.00	
M196	3	5	86	1.50	0.96	0.10	1.00	1.00	0.00	
M197	3	5	82	3.20	5.44	3.81	3.00	2.00	1.00	Medium
M198	3	5	62	2.00	1.20		1.00	1.00	0.00	
M199	3	5	80	2.30	1.93	1.55	1.00	1.00	0.00	
M201	3	5	92	2.50	2.00	2.20	1.00	2.00	0.00	
M204	3	5						1.00	1.00	
M210	3	5	50	2.20	1.98		1.00	1.00	0.00	
M216	3	5	72					1.00	0.00	

Appendix 4: Batatai Phase 3

burial	guan_jar	Lbk_A	Lbk_B	globular_jar	shoulder_jar	cup_jar	pedestal_plate	plate	ceramics	Bze_sword	sword_sheath
M151	0	0	0	0	0	0	1	0	1	0	0
M152	0	0	0	0	0	0	0	0	0	0	0
M153	1	0	0	0	0	0	0	0	1	0	0
M154	0	0	0	0	0	0	0	0	0	0	0
M155	0	0	0	0	0	0	0	0	0	0	0
M156	0	0	0	0	0	0	0	0	0	0	0
M157	0	0	0	0	0	0	0	0	0	0	0
M158	2	1	0	0	0	0	0	1	4	1	0
M159	0	0	0	0	0	0	0	0	0	0	0
M160	0	1	0	0	0	0	0	1	2	0	0
M161	0	0	0	0	0	0	0	1	1	0	0
M162	0	0	0	0	0	0	0	0	1	0	0
M163	3	1	1	0	0	1	1	1	9	0	0
M164	0	1	0	0	0	0	0	1	2	0	0
M165	1	1	0	0	0	0	0	2	5	0	0
M166	0	0	0	0	0	0	0	0	0	0	0
M167	0	0	0	0	0	0	0	0	0	0	0
M168	0	0	0	0	0	0	0	0	0	0	0
M169	0	0	0	0	0	0	0	0	0	0	0
M170	0	0	0	0	0	0	0	0	0	0	0
M171	0	0	0	0	0	0	0	0	0	0	0
M172	0	0	0	0	0	0	0	0	0	0	0
M173	0	0	0	0	0	0	0	0	0	0	0
M174	0	0	0	0	0	0	0	0	0	0	0
M175	0	0	0	0	0	0	0	0	0	0	0
M176	0	0	0	0	0	0	0	0	0	0	0
M177	0	0	0	0	0	0	0	0	0	1	0
M178	1	1	0	1	0	0	0	1	4	1	0
M179	0	0	0	0	0	0	0	0	0	0	0
M180	0	0	0	0	0	0	0	0	0	1	1
M181	1	1	0	0	0	1	0	0	4	1	0
M182	0	0	0	0	0	0	0	0	0	0	0
M183	1	1	0	1	0	0	1	1	6	1	1
M184	1	0	0	0	0	0	0	1	2	0	0
M185	0	0	0	0	0	0	0	0	0	0	0
M186	0	0	0	0	0	0	0	0	0	0	0

Appendix 4: Batatai Phase 3

burial	guan_jar	Lbk_A	Lbk_B	globular_jar	shoulder_jar	cup_jar	pedestal_plate	plate	ceramics	Bze_sword	sword_sheath
M187	0	0	0	0	0	0	0	0	0	0	0
M188	0	0	0	0	0	0	0	0	0	0	0
M189	0	0	0	0	0	0	0	0	0	0	0
M192	0	0	0	0	1	0	0	0	1	0	0
M193	0	0	0	0	0	0	0	0	0	0	0
M194	0	0	0	0	0	0	0	0	0	0	0
M195	0	0	0	0	0	0	0	0	0	0	0
M196	0	0	0	0	0	0	0	0	0	0	0
M197	1	1	0	0	0	0	1	0	5	0	0
M198	0	0	0	0	0	0	0	1	1	0	0
M199	0	0	0	0	0	0	0	0	0	0	0
M201	0	0	0	0	0	0	0	0	0	0	0
M204	0	0	1	0	0	0	0	0	1	0	0
M210	0	0	0	0	0	0	0	0	0	0	0
M216	0	0	0	0	0	0	0	0	0	0	0

Appendix 4: Batatai Phase 3

burial	swordtype	Bze_blade	bladetype	Bze_halberd	halberdtype	Bze_pick	Bze_arrow	Bze_quiver	Bze_knife	knifetype	Bze_buckle
M151		0		0		0	0	0	0	0	0
M152		0		0		0	0	0	0	0	0
M153		0		0		0	0	0	0	0	0
M154		0		0		0	0	0	0	0	0
M155		0		0		0	0	0	0	0	0
M156		0		0		0	0	0	1	1	0
M157		0		0		0	0	0	0	0	0
M158	1	0		0		0	0	0	0	0	0
M159		0		0		0	0	0	0	0	0
M160		0		0		0	0	0	0	0	0
M161		0		0		0	0	0	0	0	0
M162		0		0		0	0	0	0	0	0
M163		0		0		0	0	0	0	0	0
M164		0		0		0	0	0	0	0	0
M165		0		0		0	0	0	0	0	0
M166		0		0		0	0	0	0	0	0
M167		1	4	0		0	0	0	0	0	0
M168		0		0		0	0	0	1	1	0
M169		1	4	0		0	0	0	0	0	0
M170		1	5	0		0	0	0	0	0	0
M171		0		0		0	0	0	0	0	0
M172		0		0		0	0	0	0	0	0
M173		0		0		0	0	0	0	0	0
M174		0		0		0	0	0	0	0	1
M175		1	5	0		0	0	0	0	0	0
M176		0		0		0	0	0	0	0	0
M177	1	0		1	2	0	0	0	0	0	0
M178	1	0		2	2	1	2	1	1	1	1
M179		1	3	0		0	0	0	0	0	0
M180	1	0		1	2	0	0	0	0	0	1
M181	1	0		1	2	0	3	0	0	0	0
M182		0		0		0	0	0	0	0	1
M183	1	0		1	2	0	1	1	0	0	0
M184		0		0		0	0	0	0	0	0
M185		0		0		0	0	0	1	1	0
M186		0		0		0	0	0	1	1	0

Appendix 4: Batatai Phase 3

burial	swordtype	Bze_blade	bladetype	Bze_halberd	halberdtype	Bze_pick	Bze_arrow	Bze_quiver	Bze_knife	knifetype	Bze_buckle
M187		1	4	0		0	0	0	0	0	0
M188		0		0		0	0	0	0	0	1
M189		0		0		0	0	0	0	0	0
M192		0		0		0	0	0	0	0	0
M193		0		0		0	0	0	0	0	0
M194		0		0		0	0	0	0	0	0
M195		0		0		0	0	0	0	0	0
M196		0		0		0	0	0	0	0	0
M197		0		0		0	0	0	0	0	0
M198		0		0		0	0	0	0	0	0
M199		0		0		0	0	0	1	1	0
M201		0		0		0	0	0	0	0	0
M204		0		0		0	0	0	0	0	0
M210		0		0		0	0	0	0	0	0
M216		0		1	2	0	0	0	1	1	0

Appendix 4: Batatai Phase 3

burial	total_buckle	Bze_spiralbit	Bze_snakefootbit	sheet_bits	concentric_bit	total_bits	bronzeKG	KGclass	jade_bangle
M151	0	0	0	0	0	0	0.000	1.00	0
M152	0	0	0	0	0	0	0.000	1.00	0
M153	0	0	0	0	0	0	0.000	1.00	0
M154	0	0	0	3	0	3	0.000	1.00	0
M155	0	0	0	0	0	0	0.000	1.00	0
M156	0	0	0	0	0	0	0.036	2.00	0
M157	0	0	0	0	0	0	0.000	1.00	0
M158	0	0	0	1	0	1	0.224	2.00	0
M159	0	0	0	0	0	0	0.000	1.00	0
M160	0	0	0	0	0	0	0.000	1.00	0
M161	0	0	0	0	0	0	0.000	1.00	0
M162	0	0	0	0	0	0	0.000	1.00	0
M163	0	0	0	0	0	0	0.000	1.00	0
M164	0	0	0	0	0	0	0.000	1.00	0
M165	0	0	0	0	0	6	0.000	1.00	0
M166	0	0	0	0	0	0	0.000	1.00	0
M167	0	0	0	0	0	0	0.076	2.00	0
M168	0	0	0	0	0	0	0.064	2.00	0
M169	0	0	0	0	0	0	0.110	2.00	0
M170	0	0	0	0	0	0	0.068	2.00	0
M171	0	0	0	0	0	0	0.000	1.00	0
M172	0	0	0	0	0	0	0.000	1.00	0
M173	0	0	0	0	0	0	0.000	1.00	0
M174	1	0	0	0	0	0	0.062	2.00	0
M175	0	0	0	0	0	0	0.148	2.00	0
M176	0	0	0	0	0	0	0.132	2.00	0
M177	0	0	0	0	0	1	0.552	3.00	0
M178	1	0	4	0	2	6	0.792	3.00	0
M179	0	0	0	0	0	0	0.152	2.00	0
M180	1	0	0	0	0	0	0.636	3.00	0
M181	0	0	0	0	0	0	0.584	3.00	0
M182	1	0	0	0	0	0	0.056	2.00	0
M183	0	0	0	2	0	3	1.068	4.00	1
M184	0	0	0	0	0	0	0.000	1.00	0
M185	0	0	0	0	0	0	0.038	2.00	0
M186	0	0	1	0	0	0	0.064	2.00	0

Appendix 4: Batatai Phase 3

burial	total_buckle	Bze_spiralbit	Bze_snakefootbit	sheet_bits	concentric_bit	total_bits	bronzeKG	KGclass	jade_bangle
M187	0	0	0	0	0	0	0.042	2.00	0
M188	1	0	0	0	0	0	0.056	2.00	0
M189	0	0	0	0	0	0	0.000	1.00	0
M192	0	1	0	0	0	1	0.036	2.00	0
M193	0	0	0	0	0	0	0.000	1.00	0
M194	0	0	0	0	0	0	0.000	1.00	0
M195	0	0	0	0	0	0	0.000	1.00	0
M196	0	0	0	0	0	0	0.000	1.00	0
M197	0	0	0	0	0	0	0.000	1.00	0
M198	0	0	0	0	0	0	0.000	1.00	0
M199	0	0	0	0	0	0	0.038	2.00	0
M201	0	0	0	0	0	0	0.000	1.00	0
M204	0	0	0	0	0	0	0.000	1.00	0
M210	0	0	0	0	0	0	0.000	1.00	0
M216	0	0	0	1	0	1	0.160	2.00	0

Appendix 4: Batatai Phase 3

burial	jade_ear_disk	eardisk_type	jade_tube_beads	total_beads	neck_orn
M151	0		0	0	0
M152	0		0	0	0
M153	0		0	0	0
M154	1	L	0	0	0
M155	0		0	0	0
M156	0		0	0	0
M157	0		0	0	0
M158	0		0	0	0
M159	0		0	0	0
M160	0		0	0	0
M161	0		0	0	0
M162	0		0	0	0
M163	0		0	0	0
M164	0		0	0	0
M165	2	LS	0	1	1
M166	1	M	0	0	0
M167	0		0	0	0
M168	0		0	0	0
M169	0		0	0	0
M170	0		0	0	0
M171	0		0	0	0
M172	0		0	0	0
M173	0		0	0	0
M174	0		0	0	0
M175	0		0	0	0
M176	0		0	0	0
M177	0		0	0	0
M178	2	M	0	0	0
M179	0		0	0	0
M180	0		0	0	0
M181	0		0	0	0
M182	0		0	0	0
M183	1	L	0	0	0
M184	0		0	0	0
M185	0		0	0	0
M186	0		0	0	0

Appendix 4: Batatai Phase 3

burial	jade_ear_disk	eardisk_type	jade_tube_beads	total_beads	neck_orn
M187	0		0	0	0
M188	1	M	0	0	0
M189	0		0	0	0
M192	0		0	0	0
M193	0		0	0	0
M194	0		3	3	1
M195	0		0	0	0
M196	0		0	0	0
M197	0		0	0	0
M198	0		0	0	0
M199	0		0	0	0
M201	0		0	0	0
M204	0		0	0	0
M210	0		0	0	0
M216	0		0	0	0

Appendix 5: Batatai Phase 4

burial	excv_period	season	orientation	gravelength	area	volume	tombsize	categories	tripod	tripodtype	tripodSize	guan_jar
M99	4	4	132	2.00	1.20	0.54	2.00	0.00	0			0
M97	4	4	70	2.60	1.98	0.49	3.00	1.00	1	1	Medium	1
M96	4	4	250	2.50	2.00		3.00	1.00	0			0
M94	4	4	78	2.70	2.43		3.00	3.00	0			0
M93	4	3						1.00	1	1	Medium	0
M92	4	3						1.00	1	2	Medium	0
M91	4	3						2.00	0			0
M89	4	3		1.70	1.05	0.23	2.00	2.00	0			0
M88	4	3		1.60	1.58	0.79	2.00	1.00	0			0
M87	4	3						1.00	0			0
M86	4	3						0.00	0			0
M85	4	3		2.50	2.00	0.90	3.00	2.00	0			0
M84	4	3	126					1.00	1	2	Medium	1
M83	4	3		2.40	1.56	0.36	2.00	2.00	1	2	Medium	1
M82	4	3	300	1.30	0.52	0.10	1.00	0.00	0			0
M80	4	3						0.00	0			0
M75	4	3						1.00	0			0
M74	4	3	80	1.80	1.08	0.11	2.00	1.00	0			0
M73	4	3	70	1.80	1.44		2.00		0			0
M72	4	3	80	2.20	1.23	0.27	2.00	1.00	0			0
M71	4	3	58	1.55	1.02		2.00	1.00	0			0
M59	4	3	100	1.50	1.00	0.01	2.00	1.00	0			0
M57	4	3	80					1.00	0			0
M37	4	2	100	2.20	2.02		3.00	1.00	0			0
M150	4	4	65	2.50	2.00	1.60	3.00	0.00	0			0
M149	4	4	78	2.20	1.10	0.17	2.00	1.00	0			0
M148	4	4	60	2.00	1.36	0.20	2.00	1.00	0			0
M147	4	4	66	2.00	1.20	0.24	2.00	1.00	1	1	Medium	1
M146	4	4	50	2.10	1.68		2.00	0.00	0			0
M144	4	4	180	2.20	2.20	0.22	3.00	2.00	0			0
M143	4	4	88	2.50	2.25	1.01	3.00	3.00	0			0
M142	4	4	90	1.90	1.03	0.26	2.00	1.00	0			0
M141	4	4	268	2.10	1.85	1.16	3.00	2.00	0			0
M140	4	4	79	1.80	1.08	0.76	2.00	2.00	0			0
M139	4	4						1.00	0			1
M138	4	4	300					0.00	0			0

Appendix 5: Batatai Phase 4

burial	excv_period	season	orientation	gravelength	area	volume	tombsize	categories	tripod	tripodtype	tripodSize	guan_jar
M137	4	4						0.00	0			0
M136	4	4	60	2.20	1.32	0.92	2.00	1.00	0			0
M135	4	4	66	1.90	1.44	0.19	2.00	1.00	0			1
M134	4	4						1.00	0			0
M133	4	4	81	2.20	1.19		2.00	0.00	0			0
M132	4	4	78	1.60	1.01		2.00	0.00	0			0
M131	4	4						0.00	0			0
M129	4	4	71	2.50				1.00	0			0
M128	4	4	71	2.10	1.26	0.09	2.00	1.00	0			0
M126	4	4						0.00	0			0
M125	4	4						0.00	0			0
M124	4	4						0.00	0			0
M123	4	4	70	2.10	0.88	0.29	2.00	2.00	0			0
M122	4	4						1.00	0			0
M121	4	4						2.00	0			0
M120	4	4						0.00	0			0
M119	4	4	61	2.20	2.11	0.32	3.00	3.00	1	1	Medium	1
M118	4	4						2.00	2	12	Medium	0
M117	4	4	68	2.10	1.26	0.38	2.00	1.00	0			0
M116	4	4	81	2.17	1.52	0.61	2.00	1.00	0			0
M114	4	4	84	1.80	1.15	0.14	2.00	1.00	0			0
M113	4	4	72	1.70	0.54		1.00	1.00	0			0
M112	4	4	260	1.90	1.48	0.27	2.00	0.00	0			0
M111	4	4	72	2.00	1.30	0.13	2.00	1.00	0			0
M110	4	4	63	2.00	1.20		2.00	1.00	0			0
M108	4	4	88	2.10	1.26	0.44	2.00	1.00	2	2	Medium	0
M107	4	4	78	2.10	1.68	0.34	2.00	0.00	0			0
M106	4	4	72	2.20	1.32	0.40	2.00	1.00	0			1
M105	4	4	256	2.00	1.00	0.18	2.00	1.00	0			0
M104	4	4	240	2.20	1.58	0.10	2.00	2.00	0			0
M103	4	4	83	1.50	1.20	0.24	2.00	1.00	1	2	Medium	0
M102	4	4	46	2.00	1.20		2.00	1.00	0			0
M101	4	4		2.00	1.20	0.12	2.00	1.00	0			0

Appendix 5: Batatai Phase 4

burial	Lbk_A	Lbk_B	Hu_jar	shoulder_jar	pedestal_plate	plate	ceramics	Bze_roundsword	Bze_flatsword	swordtype	Bze_blade
M99	0	0	0	0	0	0	0	0	0		0
M97	0	0	0	0	0	0	2	0	0		0
M96	0	0	0	0	0	0	0	0	0		0
M94	0	0	0	0	0	1	1	0	0		0
M93	1	0	0	0	0	0	2	0	0		0
M92	0	0	0	0	0	0	1	0	0		0
M91	0	0	0	0	0	0	0	0	0	2	0
M89	0	0	0	0	0	0	1	0	0		0
M88	0	0	0	0	0	0	0	0	0		0
M87	0	0	0	0	0	0	0	0	0		0
M86	0	0	0	0	0	0	0	0	0		0
M85	0	0	0	0	0	0	0	0	0		0
M84	1	0	0	0	0	1	4	0	0		0
M83	0	0	1	0	0	0	3	1	0	1	0
M82	0	0	0	0	0	0	0	0	0		0
M80	0	0	0	0	0	0	0	0	0		0
M75	0	0	0	0	0	0	0	0	1	1	0
M74	0	0	0	0	0	0	0	0	0		0
M73	0	0	0	0	0	1	1	0	0		0
M72	0	0	0	0	0	0	0	0	0		0
M71	0	0	0	0	0	0	0	0	0		0
M59	0	0	0	0	0	0	0	1	0	1	0
M57	0	0	0	0	0	0	0	0	0		0
M37	0	0	0	0	0	0	0	0	0		2
M150	0	0	0	0	0	0	0	0	0		0
M149	0	0	0	0	0	0	0	0	0		1
M148	0	0	0	0	0	0	0	0	0		0
M147	0	0	0	0	0	0	2	0	0		0
M146	0	0	0	0	0	0	0	0	0		0
M144	0	0	0	0	0	0	0	0	0		0
M143	0	0	1	0	2	0	3	0	0		0
M142	0	0	0	0	0	0	0	0	0		0
M141	0	0	0	0	0	1	1	1	0	1	0
M140	0	0	0	0	0	0	0	0	0		0
M139	0	0	0	0	0	0	1	0	0		0
M138	0	0	0	0	0	0	0	0	0		0

Appendix 5: Batatai Phase 4

burial	Lbk_A	Lbk_B	Hu_jar	shoulder_jar	pedestal_plate	plate	ceramics	Bze_roundsword	Bze_flatsword	swordtype	Bze_blade
M137	0	0	0	0	0	0	0	0	0		0
M136	0	0	0	0	0	0	0	0	0		1
M135	0	0	0	0	0	0	1	0	0		0
M134	0	0	0	0	0	0	0	0	0		0
M133	0	0	0	0	0	0	0	0	0		0
M132	0	0	0	0	0	0	0	0	0		0
M131	0	0	0	0	0	0	0	0	0		0
M129	0	0	0	0	0	0	0	1	0	1	0
M128	0	0	0	0	0	0	0	0	0		0
M126	0	0	0	0	0	0	0	0	0		0
M125	0	0	0	0	0	0	0	0	0		0
M124	0	0	0	0	0	0	0	0	0		0
M123	0	0	0	0	0	1	1	0	0		0
M122	0	0	0	0	0	0	0	0	0		0
M121	0	0	0	0	0	0	0	0	0		0
M120	0	0	0	0	0	0	0	0	0		0
M119	1	0	0	0	0	1	4	0	0		0
M118	0	0	0	0	1	0	3	0	0		1
M117	0	0	0	0	0	0	0	1	0	1	1
M116	0	0	0	0	0	0	0	0	0		0
M114	0	0	0	0	0	0	0	0	0		0
M113	0	0	0	0	0	0	0	0	0		0
M112	0	0	0	0	0	0	0	0	0		0
M111	0	0	0	0	0	0	0	0	0		0
M110	0	0	0	0	0	0	0	0	0		0
M108	0	1	0	0	0	0	3	0	0		0
M107	0	0	0	0	0	0	0	0	0		0
M106	0	0	1	0	0	0	2	0	0		0
M105	0	0	0	0	0	0	0	0	0		0
M104	0	0	0	0	0	0	0	0	0		0
M103	2	1	0	0	0	0	4	0	0		0
M102	0	0	0	0	0	0	0	0	0		0
M101	0	0	0	0	0	0	0	0	0		0

Appendix 5: Batatai Phase 4

burial	bladetype	Bze_halberd	halberd_type	Bze_spear	speartype	Bze_armor	bronze_ax	Bze_axtype	Bze_chisel	Bze_knife	knifetype
M99		0		0		0	0		0	0	
M97		0		0		0	0		0	0	
M96		0		0		0	0		0	1	2
M94		0		1	B3	0	0		0	0	
M93		0		0		0	0		0	0	
M92		0		0		0	0		0	0	
M91		0		0		0	1	2	0	0	
M89		0		1	B3	0	0		0	0	
M88		0		1	B2	0	0		0	1	2
M87		0		0		0	0		0	0	
M86		0		0		0	0		0	0	
M85		0		0		0	1	2	0	0	
M84		0		0		0	0		0	0	
M83		0		0		0	0		0	0	
M82		0		0		0	0		0	0	
M80		0		0		0	0		0	0	
M75		0		0		0	0		0	0	
M74		0		0		0	0		0	1	1
M73		0		0		0	0		0	0	
M72		0		0		0	0		0	1	2
M71		0		0		0	0		0	0	
M59		0		0		0	0		0	0	
M57		0		0		0	0		0	0	
M37	5	0		1	A1	0	0		0	0	
M150		0		0		0	0		0	0	
M149	4	0		0		0	0		0	0	
M148		0		1	B2	0	0		0	0	
M147		0		0		0	0		0	0	
M146		0		0		0	0		0	0	
M144		0		0		0	1	2	0	0	
M143		1	1	1	A2	1	0		0	1	1
M142		0		0		0	0		0	1	1
M141		1	1	0		0	0		0	0	
M140		1	1	0		0	0		0	0	
M139		0		0		0	0		0	0	
M138		0		0		0	0		0	0	

Appendix 5: Batatai Phase 4

burial	bladetype	Bze_halberd	halberd_type	Bze_spear	speartype	Bze_armor	bronze_ax	Bze_axtype	Bze_chisel	Bze_knife	knifetype
M137		0		0		0	0		0	0	
M136	4	0		0		0	0		0	0	
M135		0		0		0	0		0	0	
M134		0		0		0	0		0	1	1
M133		0		0		0	0		0	0	
M132		0		0		0	0		0	0	
M131		0		0		0	0		0	0	
M129		1	2	0		0	0		0	0	
M128		0		0		0	0		1	1	1
M126		0		0		0	0		0	0	
M125		0		0		0	0		0	0	
M124		0		0		0	0		0	0	
M123		0		0		0	0		0	0	
M122		0		0		0	0		0	1	2
M121		0		0		0	0		0	0	
M120		0		0		0	0		0	0	
M119		0		1	B2	0	0		0	0	
M118	4	1	3	0		0	0		0	0	
M117	4	0		0		0	0		0	0	
M116		0		0		0	0		0	1	1
M114		0		0		0	0		0	0	
M113		0		0		0	0		0	0	
M112		0		0		0	0		0	0	
M111		0		0		0	0		0	0	
M110		0		0		0	0		0	0	
M108		0		0		0	0		0	0	
M107		0		0		0	0		0	0	
M106		0		0		0	0		0	0	
M105		0		0		0	0		0	1	1
M104		0		0		0	0		1	0	
M103		0		0		0	0		0	0	
M102		0		0		0	0		0	0	
M101		0		0		0	0		0	0	

Appendix 5: Batatai Phase 4

burial	Bze_animalbuckle	total_buckle	Bze_spiral_bit	Bze_snakefootbit	sheet_bits	total_bits	orn_belt	Bze_bangle	bangletype
M99	0	0	0	0	0	0	0	0	
M97	0	0	0	0	0	0	0	0	
M96	0	0	0	0	0	0	0	0	
M94	0	1	0	0	0	0	2	0	
M93	0	0	0	0	0	0	0	0	
M92	0	0	0	0	0	0	0	0	
M91	0	1	0	0	1	1	3	0	
M89	0	0	0	0	0	0	0	0	
M88	0	0	0	0	0	0	0	0	
M87	0	0	0	0	0	0	0	1	2
M86	0	0	0	0	0	0	0	0	
M85	0	0	0	0	0	0	0	0	
M84	0	0	0	0	0	0	0	0	
M83	0	0	0	0	0	0	0	0	
M82	0	0	0	0	0	0	0	0	
M80	0	0	0	0	0	0	0	0	
M75	0	0	0	0	0	0	0	0	
M74	0	0	0	0	0	0	0	0	
M73	0	0	0	0	0	0	0	0	
M72	0	0	0	0	0	0	0	0	
M71	0	0	0	1	0	2	1	2	3
M59	0	0	0	0	0	0	0	0	
M57	0	0	0	0	0	0	0	0	
M37	0	0	0	0	0	0	0	0	
M150	0	0	0	0	0	0	0	0	
M149	0	0	0	0	0	0	0	0	
M148	0	0	0	0	0	0	0	0	
M147	0	0	0	0	0	0	0	0	
M146	0	0	0	0	0	0	0	0	
M144	0	0	0	0	0	0	0	0	
M143	0	0	0	0	0	0	0	0	
M142	0	0	0	0	0	0	0	0	
M141	0	0	0	0	0	0	0	0	
M140	1	1	2	0	0	3	3	0	
M139	0	0	0	0	0	0	0	0	
M138	0	0	0	0	0	0	0	0	

Appendix 5: Batatai Phase 4

burial	Bze_animalbuckle	total_buckle	Bze_spiral_bit	Bze_snakefootbit	sheet_bits	total_bits	orn_belt	Bze_bangle	bangletype
M137	0	0	0	0	0	0	0	0	
M136	0	0	0	0	0	0	0	1	2
M135	0	0	0	0	0	0	0	0	
M134	0	0	0	0	0	0	0	0	
M133	0	0	0	0	0	0	0	0	
M132	0	0	0	0	0	0	0	0	
M131	0	0	0	0	0	0	0	0	
M129	0	0	0	0	0	0	0	0	
M128	0	0	0	0	0	0	0	0	
M126	0	0	0	0	0	0	0	0	
M125	0	0	0	0	0	0	0	0	
M124	0	0	0	0	0	0	0	0	
M123	1	1	0	0	0	0	2	0	
M122	0	0	0	0	0	0	0	0	
M121	1	1	0	0	0	0	2	0	
M120	0	0	0	0	0	0	0	0	
M119	0	0	0	0	0	4	1	0	
M118	0	0	0	0	0	0	0	0	
M117	0	0	0	0	0	0	0	0	
M116	0	0	0	0	0	0	0	0	
M114	1	1	0	0	0	0	2	0	
M113	0	0	0	1	0	1	1	1	3
M112	0	0	0	0	0	0	0	0	
M111	0	0	0	1	0	1	1	0	
M110	0	0	0	0	0	0	0	1	4
M108	0	0	0	0	0	0	0	0	
M107	0	0	0	0	0	0	0	0	
M106	0	0	0	0	0	0	0	0	
M105	0	0	0	0	0	0	0	0	
M104	0	0	0	0	0	1	1	0	
M103	0	0	0	0	0	0	0	0	
M102	0	0	0	0	0	0	0	1	2
M101	0	0	0	0	0	0	0	1	2

Appendix 5: Batatai Phase 4

burial	Bze_bell	KGclass	bronzeKG	lead_ingot	jade_bangle	jade_ear_disk	eardisk_type	jade_tube_beads	agate_button
M99	0	0.00	0.000	0	0	0		0	0
M97	0	0.00	0.000	0	0	0		0	0
M96	0	1.00	0.072	0	0	0		0	0
M94	0	2.00	0.740	0	0	0		0	0
M93	0	0.00	0.000	0	0	0		0	0
M92	0	0.00	0.000	0	0	0		0	0
M91	0	2.00	0.760	0	0	0		0	0
M89	0	1.00	0.070	0	0	0		0	0
M88	0	1.00	0.214	0	0	0		0	0
M87	0	0.00	0.000	0	0	0		0	0
M86	0	0.00	0.000	0	0	0		0	0
M85	0	2.00	0.880	0	0	0		0	1
M84	0	0.00	0.000	0	0	0		0	0
M83	0	1.00	0.172	0	0	0		0	0
M82	0	0.00	0.000	0	0	0		0	0
M80	0	0.00	0.000	0	0	0		0	0
M75	0	1.00	0.348	0	0	0		0	0
M74	0	1.00	0.032	0	0	0		0	0
M73	0	0.00	0.000	0	0	0		6	1
M72	0	1.00	0.170	0	0	0		0	0
M71	0	1.00	0.022	0	0	1		0	0
M59	0	1.00	0.288	0	0	0		0	0
M57	1	0.00	0.000	0	0	0		0	1
M37	0	1.00	0.088	0	0	0		0	0
M150	0	0.00	0.000	0	0	0		0	0
M149	0	1.00	0.038	0	0	0		0	0
M148	0	1.00	0.120	0	0	0		0	0
M147	0	0.00	0.000	0	0	0		0	0
M146	1	0.00	0.000	0	0	0		0	0
M144	0	2.00	0.730	0	0	0		2	0
M143	0	3.00	2.056	3	1	2	M	6	2
M142	0	1.00	0.036	0	0	0		0	0
M141	0	1.00	0.238	0	0	0		0	0
M140	0	1.00	0.274	0	0	0		0	0
M139	0	0.00	0.000	0	0	0		0	0
M138	0	0.00	0.000	0	0	0		0	0

Appendix 5: Batatai Phase 4

burial	Bze_bell	KGclass	bronzeKG	lead_ingot	jade_bangle	jade_ear_disk	eardisk_type	jade_tube_beads	agate_button
M137	0	0.00	0.000	0	0	0		0	0
M136	0	1.00	0.078	0	0	0		0	0
M135	0	0.00	0.000	0	0	0		0	0
M134	0	1.00	0.020	0	0	0		0	0
M133	0	0.00	0.000	0	0	0		0	0
M132	0	0.00	0.000	0	0	0		0	0
M131	0	0.00	0.000	0	0	0		0	0
M129	0	1.00	0.170	0	0	0		0	0
M128	0	2.00	1.308	0	0	0		0	0
M126	0	0.00	0.000	0	0	0		0	0
M125	0	0.00	0.000	0	0	0		0	0
M124	0	0.00	0.000	0	0	0		0	0
M123	0	1.00	0.056	0	0	0		0	0
M122	0	2.00	0.600	0	0	0		0	0
M121	0	1.00	0.056	0	0	1	M	0	0
M120	0	0.00	0.000	0	0	0		0	0
M119	0	0.00	0.000	0	0	0		1	0
M118	0	1.00	0.296	0	0	0		0	0
M117	0	1.00	0.222	0	0	0		0	0
M116	0	1.00	0.012	0	0	0		0	0
M114	0	1.00	0.056	0	0	0		0	0
M113	0	1.00	0.040	0	0	0		0	0
M112	0	0.00	0.000	0	0	0		0	0
M111	0	1.00	0.022	0	0	0		0	0
M110	0	1.00	0.024	0	0	0		0	0
M108	0	0.00	0.000	0	0	0		0	0
M107	0	0.00	0.000	0	0	0		0	0
M106	0	0.00	0.000	0	0	0		0	0
M105	0	1.00	0.036	0	0	0		0	0
M104	0	0.00	0.000	0	0	0		0	0
M103	0	0.00	0.000	0	0	0		0	0
M102	0	0.00	0.000	0	0	0		0	0
M101	0	0.00	0.000	0	0	0		0	0

Appendix 5: Batatai Phase 4

burial	turquoise_beads	total_beads	neck_orn	sash
M99	0	0	0	0
M97	0	0	0	0
M96	0	0	0	0
M94	0	0	0	0
M93	0	0	0	0
M92	0	0	0	0
M91	0	0	0	0
M89	0	0	0	0
M88	0	0	0	0
M87	0	0	0	0
M86	0	0	0	0
M85	0	1	1	0
M84	0	0	0	0
M83	0	0	0	0
M82	0	0	0	0
M80	0	0	0	0
M75	0	0	0	0
M74	0	0	0	0
M73	64	71	0	1
M72	0	0	0	0
M71	0	0	0	0
M59	0	0	0	0
M57	0	1	1	0
M37	0	0	0	0
M150	0	0	0	0
M149	0	0	0	0
M148	0	0	0	0
M147	0	0	0	0
M146	0	0	0	0
M144	0	2	1	0
M143	2	11	0	1
M142	0	0	0	0
M141	0	0	0	0
M140	0	0	0	0
M139	0	0	0	0
M138	0	0	0	0

Appendix 5: Batatai Phase 4

burial	turquoise_beads	total_beads	neck_orn	sash
M137	0	0	0	0
M136	0	0	0	0
M135	0	0	0	0
M134	0	0	0	0
M133	0	0	0	0
M132	0	0	0	0
M131	0	0	0	0
M129	0	0	0	0
M128	0	0	0	0
M126	0	0	0	0
M125	0	0	0	0
M124	0	0	0	0
M123	0	0	0	0
M122	0	0	0	0
M121	0	0	0	0
M120	0	0	0	0
M119	0	1	1	0
M118	0	0	0	0
M117	0	0	0	0
M116	0	0	0	0
M114	0	0	0	0
M113	0	0	0	0
M112	0	0	0	0
M111	0	0	0	0
M110	0	0	0	0
M108	0	0	0	0
M107	0	0	0	0
M106	0	0	0	0
M105	0	0	0	0
M104	0	0	0	0
M103	0	0	0	0
M102	0	0	0	0
M101	0	0	0	0

Appendix 6: Batatai Phase 5

burial	excv_period	season	orientation	gravelength	area	volume	pot_cup	tripod	tripodsize	guan_jar	Lbk_A	Lbk_B	Hu_jar
M98	4	4	175	1.80	1.260		0	0		0	0	0	1
M95	4	4	180	2.50	1.800	0.090	0	0		0	0	0	0
M90	4	3		2.45	2.010	0.502	1	0		0	0	0	0
M9	4	1					0	0		0	1	0	0
M81	4	3	178	1.78	1.104	0.220	0	0		0	0	0	0
M8	4	1					0	0		0	0	0	0
M70	4	3	357	1.60	0.896		0	0		0	0	0	0
M7	4	1		2.20	1.496		0	0		1	0	1	0
M69	4	3	350	3.90	8.970	7.176	0	0		0	0	0	0
M68	4	3	200	1.80	1.440		0	0		0	0	0	0
M67	4	3	160	1.98	1.307		0	0		0	0	0	0
M66	4	3	180	1.90	1.064	0.160	0	0		0	0	0	0
M64	4	3		2.10	1.470		0	0		0	0	0	0
M63	4	3	150	2.00	1.600	0.240	0	0		0	0	0	0
M62	4	3	110	2.00	1.100	0.242	1	0		0	0	0	0
M61	4	3	180	2.00	1.680	1.040	0	0		0	0	0	0
M60	4	3	180	2.00	1.400	0.140	0	0		0	0	0	0
M6	4	1					0	0		0	0	0	0
M58	4	3	190	1.80	1.260	0.819	0	0		0	0	0	0
M56	4	3	170	1.70	1.292	0.129	0	0		0	0	0	0
M55	4	3	155	1.54	0.847	0.127	0	0		0	0	0	0
M54	4	3	118	1.60	1.200	0.216	0	0		0	0	0	0
M53	4	3	170	1.80	1.260	0.189	0	0		0	0	0	0
M52	4	3	170	1.60	1.120	0.112	0	0		0	0	0	0
M51	4	3	150	1.70	1.190	0.119	0	0		0	0	0	0
M50	4	3		1.60	0.960	0.192	0	0		0	0	0	0
M5	4	1					0	0		0	0	0	0
M49	4	3	14	1.30	0.780	0.234	1	0		0	0	0	0
M48	4	3	22	1.90	1.330	0.266	0	0		0	0	0	0
M47	4	3	180	1.80	2.160		0	0		0	0	0	0
M46	4	3	28	1.75	0.910		0	0		0	0	0	0
M45	4	3	90	1.90	1.045	0.188	1	0		0	0	0	0
M44	4	3	88				0	0		0	0	0	0
M43	4	3	90	1.80	0.900	0.090	0	0		0	0	0	0
M42	4	3		1.76	1.091	0.218	0	0		0	0	0	0
M41	4	3		1.62	0.972	0.214	0	0		0	0	0	0

Appendix 6: Batatai Phase 5

burial	excv_period	season	orientation	gravelength	area	volume	pot_cup	tripod	tripodsize	guan_jar	Lbk_A	Lbk_B	Hu_jar
M40	4	3		1.85	0.925	0.231	0	0		0	0	0	0
M39	4	2	140	2.20	1.804		0	0		0	0	0	0
M38	4	2	180	1.50	0.930		0	0		0	0	0	0
M36	4	2	130	2.00	2.024		0	0		0	0	0	0
M35	4	2	10		1.200		0	0		0	0	0	0
M34	4	2		1.70	1.275		0	0		0	0	0	0
M33	4	2		1.82	1.547		0	0		0	0	0	0
M32	4	2	141	1.90	1.045	0.627	0	0		0	0	0	0
M30	4	2					0	0		0	0	0	0
M3	4	1	357		2.940		0	0		0	0	0	0
M29	4	2					0	0		0	0	0	0
M28	4	2	210	2.30	2.346		0	0		0	0	0	0
M27	4	2	10	3.00	2.400		0	0		0	0	0	0
M25	4	2	320				0	0		0	0	0	0
M24	4	2					0	0		0	0	0	0
M23	4	2					0	0		0	0	0	0
M22	4	2	350				0	0		0	0	0	0
M21	4	1					0	0		0	0	0	0
M20	4	1					0	0		0	0	0	0
M2	4	1	356				0	0		0	0	0	0
M19	4	1					0	0		0	0	0	0
M18	4	1					0	0		0	0	0	0
M17	4	1					0	0		0	0	0	0
M16	4	1					0	0		0	0	0	0
M15	4	1					0	0		0	0	0	0
M145	4	4	30	1.50	1.260	0.252	0	0		0	0	0	0
M144	4	4	180	2.20	2.200	0.220	0	0		0	0	0	0
M14	4	1					0	0		0	0	0	0
M130	4	4	140	2.00	1.600	0.080	0	0		0	0	0	0
M13	4	1					0	1	Medium	1	0	0	0
M127	4	4	165	1.50	0.990	0.099	0	0		0	0	0	0
M12	4	1					0	0		0	0	0	0
M115	4	4	5	2.00	1.380	0.177	0	0		1	1	0	0
M109	4	4	180	2.75	4.565	0.914	0	1	Medium	0	0	0	1
M100	4	4	190	2.40	1.824	0.274	0	0		0	1	0	0
M10	4	1					0	0		0	0	0	0

Appendix 6: Batatai Phase 5

burial	shoulder_jar	cup_jar	cup	basin	pedestal_plate	plate	ceramics	Bze_roundsword	swrd_sheath	swordtype
M98	0	0	0	0	0	0	1	0	0	
M95	0	0	0	0	0	0	0	1	0	1
M90	0	0	0	1	0	0	1	0	0	
M9	0	0	1	0	0	0	2	0	0	
M81	0	0	0	0	0	0	0	1	0	2
M8	0	0	0	0	0	0	0	0	0	
M70	0	0	0	0	0	0	0	0	0	
M7	0	0	0	0	0	0	2	0	0	
M69	0	0	0	0	1	0	1	0	1	
M68	1	0	0	0	0	0	1	0	0	
M67	0	0	0	0	0	0	0	1	0	2
M66	0	0	0	0	0	0	0	0	0	
M64	0	0	0	0	0	0	0	0	0	
M63	0	0	0	0	0	0	0	0	0	
M62	0	0	0	0	0	0	0	0	0	
M61	0	0	0	0	0	0	0	0	0	
M60	0	0	0	0	0	0	0	0	0	
M6	0	0	1	0	0	0	1	0	0	
M58	0	0	0	0	0	0	0	0	0	
M56	0	0	0	0	0	0	0	0	0	
M55	0	0	0	0	0	0	0	0	0	
M54	0	0	0	1	0	0	1	0	0	
M53	0	0	0	0	0	0	0	0	0	
M52	0	0	0	0	0	0	0	0	0	
M51	0	0	0	0	0	0	0	0	0	
M50	0	0	0	0	0	0	0	0	0	
M5	0	0	0	0	0	0	0	0	0	
M49	0	0	1	0	0	0	1	0	0	
M48	0	0	0	0	0	0	0	0	0	
M47	0	0	0	0	0	0	0	0	0	
M46	0	0	0	0	0	0	0	0	0	
M45	0	0	2	0	0	0	2	0	0	
M44	0	0	0	0	0	0	0	0	0	
M43	0	0	0	0	0	0	0	0	0	
M42	0	0	0	0	0	0	0	0	0	
M41	0	0	0	0	0	0	0	3	0	2

Appendix 6: Batatai Phase 5

burial	shoulder_jar	cup_jar	cup	basin	pedestal_plate	plate	ceramics	Bze_roundsword	swrd_sheath	swordtype
M40	0	0	0	0	0	0	0	0	0	
M39	0	0	0	0	0	0	0	0	0	
M38	0	0	0	0	0	0	0	0	0	
M36	0	0	0	0	0	0	0	0	0	
M35	0	0	0	0	0	0	0	1	0	2
M34	0	0	0	0	0	0	0	0	0	
M33	0	0	0	0	0	0	0	0	0	
M32	0	0	0	0	0	0	0	0	0	
M30	0	0	0	0	0	0	0	0	0	
M3	0	0	0	0	0	0	0	0	0	
M29	0	0	0	1	1	0	2	0	0	
M28	0	0	0	0	0	0	0	0	0	
M27	0	0	0	0	0	0	0	0	0	
M25	0	0	0	0	0	0	0	0	0	
M24	0	0	0	0	0	0	0	0	0	
M23	0	0	0	0	0	0	0	0	0	
M22	0	0	0	0	0	0	0	0	0	
M21	0	0	0	0	0	0	0	0	0	
M20	0	0	0	0	0	0	0	0	0	
M2	1	0	0	0	0	0	1	0	0	
M19	0	0	0	0	0	0	0	0	0	
M18	0	0	0	0	0	0	0	0	0	
M17	0	0	0	0	0	0	0	0	0	
M16	0	0	0	0	0	0	0	0	0	
M15	0	0	0	0	0	0	0	0	0	
M145	0	0	0	0	0	0	0	0	0	
M144	0	0	0	0	0	0	0	0	0	
M14	0	0	0	0	0	0	0	0	0	
M130	0	0	0	0	1	0	1	0	0	
M13	0	0	0	0	0	0	2	0	0	
M127	0	0	0	0	0	0	0	0	0	
M12	0	0	0	0	0	0	0	0	0	
M115	0	0	0	0	1	1	4	0	0	
M109	0	0	0	0	3	0	5	0	0	
M100	1	0	0	0	0	0	2	0	0	
M10	0	0	0	0	0	0	0	0	0	

Appendix 6: Batatai Phase 5

burial	Bze_halberd	halberdtype	Bze_spear	speartype	fullweapon	Bze_arrow	crossbow	Bze_ax	axtype	Bze_chisel
M98	0		0		0	0	0	0		0
M95	1	1	1	A2	0	0	0	0		0
M90	0		0		0	0	0	0		0
M9	0		0		0	0	0	0		0
M81	1	1	1	A1	1	0	0	0		0
M8	0		0		0	0	0	0		0
M70	0		0		0	0	0	0		0
M7	0		0		0	0	0	0		0
M69	0		1	C	0	0	1	0		0
M68	0		1	A2	0	0	0	0		0
M67	0		1	A1	0	0	0	0		0
M66	0		0		0	0	0	0		0
M64	0		0		0	0	0	0		0
M63	0		0		0	0	0	0		0
M62	0		0		0	0	0	0		0
M61	0		0		0	0	0	0		0
M60	0		0		0	0	0	0		0
M6	0		0		0	0	0	0		0
M58	0		0		0	0	0	0		0
M56	0		0		0	0	0	0		0
M55	0		0		0	0	0	0		0
M54	0		0		0	0	0	0		0
M53	0		0		0	0	0	0		0
M52	0		1	B1	0	0	0	0		0
M51	0		0		0	5	0	0		0
M50	0		0		0	0	0	0		0
M5	0		0		0	0	0	0		0
M49	0		0		0	0	0	0		0
M48	0		0		0	0	0	0		0
M47	0		0		0	0	0	0		0
M46	0		0		0	0	0	0		0
M45	0		0		0	0	0	0		0
M44	0		0		0	0	0	0		0
M43	0		1	A1	0	0	0	0		0
M42	0		0		0	0	0	0		0
M41	1	1	1	B1	1	0	0	0		0

Appendix 6: Batatai Phase 5

burial	Bze_halberd	halberdtype	Bze_spear	speartype	fullweapon	Bze_arrow	crossbow	Bze_ax	axtype	Bze_chisel
M40	0		0		0	0	0	0		0
M39	0		0		0	0	0	0		0
M38	1	1	1	A2	0	0	0	0		0
M36	0		0		0	0	0	0		0
M35	0		1	A1	0	0	0	0		0
M34	0		0		0	0	0	0		0
M33	0		0		0	0	0	0		0
M32	0		0		0	0	0	0		0
M30	0		0		0	0	1	0		0
M3	0		0		0	0	0	0		0
M29	0		0		0	0	0	0		0
M28	0		0		0	0	0	0		0
M27	0		1	A1	0	0	1	1	3	1
M25	1	2	3	B1,A1-2	0	0	0	1	2	0
M24	0		0		0	0	0	0		0
M23	0		0		0	0	0	0		0
M22	0		0		0	0	0	0		0
M21	1	3	0		0	0	0	0		0
M20	0		0		0	0	0	0		0
M2	0		1	A1	0	0	0	0		0
M19	0		0		0	0	0	0		0
M18	0		0		0	0	0	0		0
M17	0		0		0	0	0	0		0
M16	0		0		0	1	0	0		0
M15	0		0		0	5	0	0		0
M145	0		0		0	0	0	0		0
M144	0		0		0	0	0	1	2	0
M14	0		0		0	0	0	0		0
M130	0		0		0	0	0	0		0
M13	0		0		0	0	0	0		0
M127	1		0		0	0	0	0		0
M12	0		0		0	0	0	0		0
M115	0		0		0	0	0	0		0
M109	0		0		0	0	0	0		0
M100	0		0		0	0	0	0		0
M10	0		0		0	0	0	0		0

Appendix 6: Batatai Phase 5

burial	Bze_knife	knifetype	cast_mold	Bze_cauldron	Bze_mouvessel	Bze_bowl	Bze_hujar	Bze_mirror	Bze_cup	turquoise_buckle
M98	0		0	0	0	0	0	0	0	0
M95	0		0	0	0	0	0	0	0	0
M90	0		0	0	1	0	0	0	0	0
M9	1	1	0	0	0	0	0	0	0	0
M81	0		0	0	0	0	0	0	0	1
M8	0		0	0	1	1	0	0	0	0
M70	0		0	0	0	0	0	0	0	0
M7	0		0	1	1	0	0	0	0	0
M69	0		1	1	1	0	1	1	1	0
M68	0		0	0	0	0	0	0	0	0
M67	0		0	0	0	0	0	0	0	0
M66	0		0	0	0	0	0	0	0	0
M64	0		0	0	0	0	0	0	0	0
M63	0		0	0	0	0	0	0	0	0
M62	0		0	0	0	0	0	0	0	0
M61	0		0	0	0	0	0	0	0	0
M60	1	1	0	0	0	0	0	0	0	1
M6	0		0	0	0	0	0	0	0	0
M58	0		0	0	0	0	0	0	0	0
M56	0		0	0	0	0	0	0	0	0
M55	0		0	0	0	0	0	0	0	0
M54	0		0	0	0	0	0	0	0	0
M53	0		0	0	0	0	0	0	0	0
M52	0		0	0	0	0	0	0	0	0
M51	0		0	0	0	0	0	0	0	0
M50	0		0	0	0	0	0	0	0	0
M5	0		0	0	0	0	0	0	0	0
M49	0		0	0	0	0	0	0	0	0
M48	0		0	0	0	0	0	0	0	0
M47	0		0	0	0	0	0	0	0	0
M46	0		0	0	0	1	0	0	0	0
M45	0		0	1	0	0	0	0	0	0
M44	0		0	0	0	0	0	0	0	0
M43	0		0	0	0	0	0	0	0	0
M42	0		0	0	0	0	0	0	0	0
M41	0		0	0	0	0	0	0	0	1

Appendix 6: Batatai Phase 5

burial	Bze_knife	knifetype	cast_mold	Bze_cauldron	Bze_mouvessel	Bze_bowl	Bze_hujar	Bze_mirror	Bze_cup	turquoise_buckle
M40	0		0	0	0	0	0	0	0	0
M39	0		0	0	0	0	0	0	0	0
M38	0		0	0	0	0	0	0	0	0
M36	0		0	0	0	0	0	0	0	0
M35	0		0	0	0	0	0	0	0	0
M34	0		0	0	0	0	0	0	0	0
M33	0		0	0	0	0	0	0	0	0
M32	0		0	0	0	0	0	0	0	0
M30	0		0	0	0	0	0	0	0	0
M3	0		0	0	0	0	0	0	0	0
M29	0		0	0	0	0	0	0	0	0
M28	1	1	0	0	0	0	0	0	0	1
M27	0		0	0	0	0	0	0	0	0
M25	0		0	0	0	0	0	0	0	0
M24	0		0	0	0	0	0	0	0	0
M23	0		0	1	1	0	0	0	0	0
M22	0		0	0	0	0	0	0	0	0
M21	0		0	0	0	0	0	0	0	0
M20	0		0	0	0	0	0	0	0	0
M2	0		0	1	0	0	0	0	0	0
M19	0		0	0	1	0	0	0	0	0
M18	0		0	0	0	0	0	0	0	0
M17	0		0	0	0	0	0	0	0	0
M16	0		0	0	0	0	0	1	0	0
M15	0		1	0	0	0	0	0	0	0
M145	0		0	0	0	0	0	0	0	0
M144	0		0	0	0	0	0	0	0	0
M14	0		0	0	0	0	0	0	0	0
M130	0		0	0	0	0	0	0	0	0
M13	0		0	0	0	0	0	0	0	0
M127	0		0	0	0	0	0	0	0	0
M12	0		0	0	0	0	0	0	0	0
M115	0		0	0	0	0	0	0	0	0
M109	0		0	0	0	0	0	0	0	0
M100	0		0	0	0	0	0	0	0	0
M10	0		0	0	0	0	0	0	0	0

Appendix 6: Batatai Phase 5

burial	bull_theme_buckle	total_buckle	Bze_spiral_bit	total_bits	orn_belt	belt_hook	belthook_size	Bze_bangle	bangletype	bronzeKG
M98	0	0	0	0	0	0		0		
M95	0	0	0	0	0	0		0		0.602
M90	0	0	0	0	0	0		1	1	2.056
M9	0	0	0	0	0	0		0		0.180
M81	0	1	0	0	2	0		0		0.478
M8	0	0	0	0	0	0		0		0.724
M70	0	0	0	0	0	0		0		
M7	0	0	0	0	0	1	1	0		1.328
M69	1	0	0	11	2	1	2	0		7.354
M68	0	0	0	0	0	0		0		0.078
M67	0	0	0	0	0	0		0		0.264
M66	0	0	0	0	0	0		0		
M64	0	0	0	0	0	0		0		0.486
M63	0	0	0	0	0	0		0		0.036
M62	0	0	0	0	0	0		0		
M61	0	0	0	0	0	0		0		0.018
M60	0	1	0	0	2	0		0		
M6	0	0	0	0	0	1	1	0		0.312
M58	0	0	0	0	0	0		0		
M56	0	0	0	0	0	1	1	0		0.042
M55	0	0	0	0	0	1	1	0		
M54	0	0	0	0	0	0		0		
M53	0	0	0	0	0	1	2	0		0.020
M52	0	0	0	0	0	1		0		0.218
M51	0	0	0	0	0	0		0		0.018
M50	0	0	0	0	0	1	2	0		0.048
M5	0	0	0	0	0	1	2	3	1	0.040
M49	0	0	0	0	0	0		0		0.194
M48	0	0	0	1	1	0		2	1	0.066
M47	0	0	0	0	0	3	2	1	2	
M46	0	0	0	0	0	0		0		
M45	0	0	0	0	0	0		0		1.730
M44	0	0	0	0	0	0		3	2	0.018
M43	0	0	0	0	0	0		0		0.068
M42	0	0	0	0	0	0		0		0.002
M41	0	1	0	0	2	0	1	1	2	1.094

Appendix 6: Batatai Phase 5

burial	bull_theme_buckle	total_buckle	Bze_spiral_bit	total_bits	orn_belt	belt_hook	belthook_size	Bze_bangle	bangletype	bronzeKG
M40	0	0	0	0	0	0		0		
M39	0	0	0	0	0	0		0		
M38	0	0	0	0	0	0		0		0.230
M36	0	0	0	0	0	0		0		
M35	0	0	0	0	0	0		0		0.180
M34	0	0	0	0	0	0		0		
M33	0	0	0	0	0	0		0		0.056
M32	0	0	17	17	1	0		2	1	0.462
M30	0	0	0	0	0	0		1	2	
M3	0	0	0	0	0	1	1	0		0.136
M29	0	0	0	0	0	0		0		
M28	0	1	0	0	0	0		0		
M27	0	0	0	0	0	0		0		1.960
M25	0	0	0	0	0	0		0		0.601
M24	0	0	0	0	0	1	2	3	2	0.058
M23	0	0	0	0	0	0		1	1	6.190
M22	0	0	0	0	0	0		1	1	
M21	0	0	1	2	1	0		1	1	0.372
M20	0	0	0	0	0	1	1	0		0.148
M2	0	0	0	0	0	0		0		1.242
M19	0	0	0	0	0	0		0		1.058
M18	0	0	3	3	1	0		1	2	0.064
M17	0	0	0	0	0	0		4	1	0.024
M16	0	0	0	0	0	0		0		
M15	0	0	0	0	0	0		0		
M145	0	0	0	0	0	0		0		
M144	0	0	0	0	0	0		0		0.730
M14	0	0	0	0	0	0		0		
M130	0	0	0	0	0	0		0		
M13	0	0	0	0	0	0		0		0.016
M127	0	0	0	0	0	0		0		0.292
M12	0	0	0	0	0	0		1	3	0.050
M115	0	0	0	0	0	0		0		
M109	0	0	0	0	0	0		0		
M100	0	1	0	0	2	0		0		
M10	0	0	0	0	0	1	1	0		0.268

Appendix 6: Batatai Phase 5

burial	han_wuzhu_coin	han_banliang_coin	dapu_coin	total_coins	iron_sword	iron_spear	iron_knife	iron_ax	iron_chisel
M98	0	0	0	0	0	0	0	0	0
M95	0	0	0	0	0	0	0	0	0
M90	4	0	0	4	0	0	0	0	0
M9	9	0	0	9	0	0	0	0	0
M81	0	0	0	0	0	0	0	0	0
M8	2	0	0	2	0	0	0	0	0
M70	0	0	0	0	0	0	0	0	0
M7	8	2	0	10	0	0	2	0	0
M69	12	0	0	12	1	0	1	0	0
M68	0	0	0	0	0	0	0	0	0
M67	0	0	0	0	0	0	0	0	0
M66	0	0	0	0	0	0	1	0	1
M64	0	0	0	0	0	0	0	0	0
M63	12	0	0	12	0	0	0	0	0
M62	0	0	0	0	0	0	0	0	0
M61	0	0	0	0	0	0	0	0	0
M60	0	0	0	0	0	0	0	0	0
M6	1	0	0	1	0	1	3	1	2
M58	0	0	0	0	0	0	0	0	0
M56	0	0	0	0	0	0	1	0	0
M55	0	0	0	0	0	0	0	0	0
M54	0	0	0	0	0	0	0	0	0
M53	3	0	0	3	0	0	2	1	0
M52	31	0	0	31	0	0	1	0	0
M51	0	0	0	0	0	0	0	2	0
M50	12	0	0	12	0	0	0	0	0
M5	0	0	0	0	0	0	0	0	0
M49	0	0	0	0	0	0	0	0	0
M48	0	0	0	0	0	0	0	0	0
M47	0	0	0	0	0	0	3	0	0
M46	0	0	0	0	0	0	2	0	0
M45	2	0	0	2	0	0	1	0	0
M44	1	0	0	1	0	0	0	0	0
M43	24	0	0	24	0	0	0	0	0
M42	0	0	0	0	0	0	2	0	0
M41	0	0	0	0	0	1	0	0	0

Appendix 6: Batatai Phase 5

burial	han_wuzhu_coin	han_banliang_coin	dapu_coin	total_coins	iron_sword	iron_spear	iron_knife	iron_ax	iron_chisel
M40	0	0	0	0	0	0	2	0	0
M39	0	0	0	0	0	0	0	0	0
M38	0	0	0	0	0	0	0	0	0
M36	0	0	0	0	0	1	1	0	0
M35	0	0	0	0	0	0	0	0	0
M34	0	0	0	0	0	0	0	0	0
M33	1	0	0	1	0	0	0	0	0
M32	0	0	0	0	0	0	0	0	0
M30	0	0	0	0	0	0	0	0	0
M3	10	18	2	30	0	0	1	1	1
M29	0	0	0	0	0	0	0	0	0
M28	0	0	0	0	1	1	1	0	0
M27	0	0	0	0	0	1	0	0	1
M25	0	0	0	0	0	0	0	0	0
M24	0	0	0	0	0	0	0	1	0
M23	2	0	0	2	0	0	1	1	1
M22	0	0	0	0	0	0	0	0	0
M21	0	0	0	0	0	0	0	0	0
M20	49	0	0	49	0	0	0	0	0
M2	0	0	0	0	0	0	0	0	0
M19	0	0	0	0	0	0	0	0	0
M18	2	0	0	2	0	0	0	0	0
M17	6	0	0	6	0	1	0	0	0
M16	0	0	0	0	0	0	1	0	0
M15	0	0	0	0	0	0	0	0	1
M145	0	0	0	0	0	0	0	0	0
M144	0	0	0	0	0	0	0	0	0
M14	0	3	1	4	0	0	0	0	0
M130	0	0	0	0	0	0	0	0	0
M13	5	0	0	5	0	0	0	0	0
M127	0	0	0	0	0	0	0	0	0
M12	19	0	0	19	0	0	0	0	0
M115	0	0	0	0	0	0	0	0	0
M109	0	0	0	0	0	0	0	0	0
M100	0	0	0	0	0	0	0	0	0
M10	79	0	0	79	0	1	1	0	0

Appendix 6: Batatai Phase 5

burial	iron_mouvessel	iron_horse	total_iron_implements	lead_ingot	jade_bangle	jade_ear_disk	eardisk_type	ade_tube_beads	agate_button
M98	0	0	0	0	0	0		0	0
M95	0	0	0	0	0	0		0	0
M90	0	0	0	0	0	0		0	0
M9	0	0	0	0	0	0		0	0
M81	0	0	0	0	0	0		0	0
M8	0	0	0	0	0	0		0	0
M70	0	0	0	0	0	0		0	0
M7	0	0	2	0	0	0		0	0
M69	0	1	3	3	1	0		0	0
M68	0	0	0	0	0	0		0	0
M67	0	0	0	0	0	0		0	0
M66	0	0	2	0	0	0		0	0
M64	0	0	0	0	0	0		0	0
M63	0	0	0	0	0	0		0	0
M62	1	0	1	0	0	0		0	0
M61	0	0	0	0	0	0		0	0
M60	0	0	0	0	0	0		0	0
M6	0	0	7	0	0	0		0	0
M58	0	0	0	0	0	1	M	0	0
M56	0	0	1	0	0	0		0	0
M55	0	0	0	0	0	0		10	0
M54	0	0	0	0	0	0		0	0
M53	0	0	3	0	0	0		0	0
M52	0	0	1	0	0	0		0	0
M51	0	0	2	0	0	0		0	0
M50	0	0	0	0	0	0		0	0
M5	0	0	0	0	0	0		9	0
M49	1	0	1	0	0	0		0	0
M48	0	0	0	0	1	0		9	0
M47	0	0	3	2	0	0		0	0
M46	0	0	2	0	0	0		0	0
M45	0	0	1	0	0	1	M	0	0
M44	0	0	0	0	0	0		0	0
M43	0	0	0	0	0	0		0	0
M42	0	0	2	0	0	0		0	0
M41	0	0	1	0	1	1	S	10	6

Appendix 6: Batatai Phase 5

burial	iron_mouvessel	iron_horse	total_iron_implements	lead_ingot	jade_bangle	jade_ear_disk	eardisk_type	ade_tube_beads	agate_button
M40	0	0	2	0	0	0		0	0
M39	0	0	0	0	0	1	L	0	0
M38	0	0	0	0	0	0		0	0
M36	0	0	2	0	0	1	S	0	0
M35	0	0	0	0	0	0		0	0
M34	0	0	0	0	0	0		0	0
M33	0	0	0	0	0	0		0	0
M32	0	0	0	0	0	2	S	9	0
M30	0	0	0	0	0	0		0	0
M3	0	0	3	0	0	0		0	1
M29	0	0	0	0	0	0		0	0
M28	0	0	3	0	0	0		0	0
M27	1	0	3	0	0	0		0	0
M25	0	0	0	0	0	0		0	0
M24	0	0	1	0	0	1	L	0	0
M23	0	0	3	0	0	0		0	0
M22	0	1	1	0	0	0		0	0
M21	0	0	0	0	0	0		0	0
M20	0	0	0	0	0	0		0	0
M2	0	0	0	0	0	0		0	0
M19	0	0	0	0	0	0		0	2
M18	0	0	0	0	0	0		0	0
M17	0	0	1	0	0	0		0	0
M16	0	0	1	0	0	0		0	0
M15	0	0	1	0	0	0		0	0
M145	0	0	0	0	0	0		0	0
M144	0	0	0	0	0	0		2	0
M14	0	0	0	0	0	0		0	0
M130	0	0	0	0	0	0		0	0
M13	0	0	0	0	0	0		0	0
M127	0	0	0	0	0	0		0	0
M12	0	0	0	0	0	0		0	0
M115	0	0	0	0	0	0		0	0
M109	0	0	0	0	0	0		0	0
M100	0	0	0	0	0	0		0	0
M10	0	0	2	0	1	0		0	0

Appendix 6: Batatai Phase 5

burial	agate_tubebeads	agate_beads	turquoise_beads	glass_beads	total_beads	neck_orn	sash
M98	0	0	0	0	0	0	0
M95	0	0	0	0	0	0	0
M90	0	0	0	0	0	0	0
M9	0	0	0	0	0	0	0
M81	0	0	0	0	0	0	0
M8	0	0	0	0	0	0	0
M70	0	0	0	0	0	0	0
M7	0	0	0	0	0	0	0
M69	0	0	0	0	0	0	0
M68	0	0	0	0	0	0	0
M67	0	0	0	0	0	0	0
M66	0	0	0	0	0	0	0
M64	0	0	0	0	0	0	0
M63	0	0	0	0	0	0	0
M62	0	0	0	0	0	0	0
M61	0	0	0	0	0	0	0
M60	0	0	0	0	0	0	0
M6	0	0	0	86	0	0	0
M58	0	0	0	0	0	0	0
M56	0	0	0	0	0	0	0
M55	0	4	1	0	15	0	1
M54	0	0	0	0	0	0	0
M53	0	0	0	0	0	0	0
M52	1	0	0	0	1	1	0
M51	0	0	0	0	0	0	0
M50	0	0	0	0	0	0	0
M5	0	0	0	0	9	0	1
M49	0	0	0	0	0	0	0
M48	3	0	0	0	12	0	1
M47	0	1	0	0	1	1	0
M46	0	0	0	0	0	0	0
M45	0	0	0	0	0	0	0
M44	0	0	0	0	0	0	0
M43	0	0	0	0	0	0	0
M42	0	0	0	0	0	0	0
M41	20	18	25	0	79	0	1

Appendix 6: Batatai Phase 5

burial	agate_tubebeads	agate_beads	turquoise_beads	glass_beads	total_beads	neck_orn	sash
M40	0	0	0	0	0	0	0
M39	0	0	0	0	0	0	0
M38	0	0	0	0	0	0	0
M36	0	0	0	0	0	1	0
M35	0	0	0	0	0	0	0
M34	0	0	0	0	0	1	0
M33	0	1	0	20	1	1	0
M32	0	4	0	0	13	0	1
M30	0	0	0	0	0	0	0
M3	0	0	0	1	1	1	0
M29	0	0	0	0	0	0	0
M28	0	0	0	0	0	0	0
M27	0	0	0	0	0	0	0
M25	0	0	0	0	0	0	0
M24	0	0	0	0	0	0	0
M23	0	0	0	0	0	0	0
M22	0	0	0	0	0	0	0
M21	0	0	0	0	0	0	0
M20	0	0	0	0	0	0	0
M2	0	0	0	0	0	0	0
M19	0	0	0	0	2	1	0
M18	0	0	0	0	0	0	0
M17	0	0	0	0	0	0	0
M16	0	0	0	0	0	0	0
M15	0	0	0	0	0	0	0
M145	0	0	0	0	0	0	0
M144	0	0	0	0	2	1	0
M14	0	0	0	0	0	0	0
M130	0	0	0	0	0	0	0
M13	0	0	0	0	0	0	0
M127	0	0	0	0	0	0	0
M12	0	0	0	0	0	0	0
M115	0	0	0	0	0	0	0
M109	0	0	0	0	0	0	0
M100	0	0	0	0	0	0	0
M10	0	0	0	0	0	0	0

Appendix 7: Batatai Tripod Coding

Vessel #	Report Type	Condition	SeasonExcv	Phase	Paste Texture
83:2	Base	Incomplete	3	3	Sandy
246:8	A2	Incomplete	6	2	Sandy
268:8	Base Carinated	Incomplete	6		Sandy
118:6	A2	Incomplete	4	3	Sandy
265:24	A2	Incomplete	6	2	Sandy
265:22	A2	Incomplete	6	2	Sandy
153:1	Guan	Incomplete	4		Sandy
207:19	Base	Incomplete	5	2	Sandy
147:5	A	Incomplete			Sandy
108:3	Base	Incomplete	4	3	Sandy
179:7	Round	Incomplete	4	3	Sandy
162	Round	Incomplete	4		Sandy
268:9	A2	Incomplete	6		Sandy
92	Base	Incomplete	3		Sandy
261:12	A	Incomplete			Sandy
103:2	Base	Incomplete	4		Sandy
265:11	A2	Incomplete	6	2	Sandy
207:4	A2	Incomplete	5	2	Sandy
165:4	Round	Incomplete	4	3	Sandy
265:3	A2	Whole	6	2	Sandy
279:22	A1	Whole	6	1	Sandy
163:1	A2	Whole	4	3	Sandy
197:7	A2	Whole	5	3	Sandy
4:2	A3	Whole	1	4	Sandy
108:1	A3	Whole	4	3	Sandy
290:5	B2	Whole	6		Sandy
265:8	A2	Whole	6	2	Sandy
205:4	A2	Whole	5	2	Sandy
118:2	Jar	Whole	4	3	Sandy
97:2	A3	Whole	4	3	Sandy
227:1	B1	Whole	6	2	Sandy
93:2	B3	Whole	3	3	Sandy
84:3	Jar	Whole	3		Sandy
181:1	A2	Whole	5	3	Sandy
242:7	B2	Whole	6	2	Sandy
279:23	A1	Whole	6	1	Sandy
183:1	A2	Whole	5	3	Sandy silt
203:7	Whole	Whole	5	2	Sandy

Appendix 7: Batatai Tripod Coding

Vessel #	Density	Vessel Ht	Neck Ht	Neck Width	Mouth Diameter	Max Diame	Base diame
83:2	Friable		5.8		18		10
246:8	Compact		6.63		22		
268:8	Friable			12			5
118:6	Friable		5.63		13		
265:24	Friable		4.53		19		
265:22	Friable		4.36		18		
153:1	Friable		9.48		24		
207:19	Friable						5
147:5	Friable		4.75		19		
108:3	Friable		5.5		16		7
179:7	Friable		4.52		15		
162	Friable		4.5				
268:9	Friable		4.56		15		
92	Friable		5.32		15		7
261:12	Compact		5.6		20		
103:2	Friable		4.2		14		5.6
265:11	Friable		4.75		17		
207:4	Friable		6.8		22		
165:4	Friable	0	4.6	0	17	0	0
265:3	Friable	19.1	4.83	12.6	17.4	15.5	
279:22	Friable	19.1	4.13	11.7	16.2	14.3	
163:1	Friable	19	4.27	10.9	15	13.8	
197:7	Friable	23.2	6.07	13.7	19.3	18.1	
4:2	Friable	19.7	3.86	12.4	16.9	15.6	
108:1	Friable	20.3	4.95	12.5	15.7	15.5	
290:5	Friable	20.6	4.07	12	15.8	16.8	
265:8	Friable	21.6	4.46	13.4	17.4	17.1	
205:4	Friable	22.4	4.56	11.5	17.1	16	
118:2	Friable	17.3	4.72	10.92	14.62	12.92	4.32
97:2	Friable	18.9	4.28	13.7	14.42	16.5	
227:1	Friable	15.8	3.8	9.55	14.25	12.35	
93:2	Friable	17.8	4.55	10.9	15.5	13.7	
84:3	Friable	18.7	4.59	12.6	16.8	15.5	6.7
181:1	Friable	25.8	6.25	16.4	21.8	19.9	4.53
242:7	Friable	19.6	5.17	13	18	15.7	
279:23	Friable	25.1	6.35	14.9	21.9	19.5	
183:1	Friable	31.9	6.25		28	25.5	
203:7	Friable	18	0	10.5	14.3	14	0

Appendix 7: Batatai Tripod Coding

Vessel #	Ht to max diame	Rim thickness	Rim Angle	Leg Ht	Leg Width	Leg angle
83:2		0.41	78	9.16	3.58	
246:8		0.41	72	11.49	4.43	
268:8		0.49	71			
118:6		0.37	77	10.93	4.35	
265:24		0.53	80	8.61	4.01	90
265:22		0.38	74	8	3.2	
153:1		0.5	85			
207:19				9.29	3.55	79
147:5		0.43	75	8.99	3.62	84
108:3		0.56	75	8.96	3.69	82
179:7		0.42	75	7.14	2.51	87
162		0.49	73	9.1	3.24	82
268:9		0.41	72	6.66	2.64	75
92		0.53	80			
261:12		0.54	65	8.33	2.83	
103:2		0.48	78	7.8	2.1	80
265:11		0.59	65	8.08	3.25	74
207:4		0.45	75	10.6	3.76	74
165:4	0	0.58	73	9.14	4.31	76
265:3	11.5	0.48	63	9.41	3.51	70
279:22	12	0.48	72	9	3.04	73
163:1	11	0.37	72	8.45	2.97	82
197:7	13	0.5	65	10.18	4.4	72
4:2	12.5	0.42	60	8.3	3.46	73
108:1	12	0.59	72	9.9	4.07	80
290:5	12.5	0.54		8.84	3.89	70
265:8	13.7	0.59		9.87	4.47	80
205:4	12.5	0.38	65	10.27	3.67	80
118:2	10	0.53	74	6.81	2.86	70
97:2	12.3	0.4	70	8.15	3.02	70
227:1	8.5	0.4	63	7.47	2.78	75
93:2	11	0.41	61	8.71	3.28	75
84:3	9.7	0.48	70	7.95	3.34	70
181:1	15.5	0.52	66	11.33	4.45	74
242:7	10.6	0.59	60	8.99	3.9	72
279:23	15	0.4	75	11.95	3.93	75
183:1	18.5	0.58	65	14.61	5.11	70
203:7	10	0	69	7.6	2.9	71

Appendix 7: Batatai Tripod Coding

Vessel #	Length of loop handle	Width loop
83:2		
246:8		
268:8		
118:6		
265:24		
265:22		
153:1		
207:19		
147:5		
108:3		
179:7		
162		
268:9		
92		
261:12		
103:2		
265:11		
207:4		
165:4	0	0
265:3	1.64	0.94
279:22	1.96	0.68
163:1		
197:7	1.45	0.78
4:2	2.1	0.55
108:1		
290:5		
265:8		
205:4		
118:2		
97:2		
227:1	1.42	1.01
93:2	1.63	0.97
84:3		
181:1	2.4	1.08
242:7		
279:23	1.69	1.1
183:1	5.81	1.64
203:7	0	0

Appendix 8: Batatai Guan-jar Coding

Vessel #	Type	Report Type	Condition	Season of Ex	Phase	Paste Texture	Paste Density	Vessel #	Vessel Ht	Neck Ht	Neck Width
184:2	Guan	Guan	Whole	5		Sandy	Friable	184:2	20.6	5.23	12.8
241:4	Guan	Guan	Whole	6		Sandy	Compact	241:4	20.5	4.14	12
241:2	Guan	Guan	Whole	6		Sandy	Friable	241:2	23.9	5.33	12.1
160:2	Guan	Guan	Whole	4		Sandy	Friable	160:2	18.1	5.01	12
139	Guan	Guan	Whole	4		Sandy	Friable	139	17.7	5.22	10.6
280:10-1	Guan	Guan	Whole	6	1	Sandy	Friable	280:10-1	21.8	5.21	11.3
163:4	Guan	Guan	Whole	4	3	Silt	Compact	163:4	12.8	3.22	8.26
205:6	Guan	Guan	Whole	5	2	Sandy	Friable	205:6	18.5	5.08	8.6
242:6	Guan w/lid	Whole	Whole	6	2	Sandy	Friable	242:6	18	4.65	11.2
119:5	Guan	Guan	Whole	4	3	Sandy	Friable	119:5	21.9	4.67	14.4
227:2	Guan	Guan	Whole	6	2	Sandy	Friable	227:2	22	5.05	12.7
178:14	Guan	Guan	Whole	4	3	Sandy	Friable	178:14	20.1	5.29	10.8
183:4	Guan	Guan	Whole	5	3	Sandy	Friable	183:4	22.8	5.6	12.7
203:5	Guan w/lid	Guan w/lid	Whole	5	2	Sandy	Friable	203:5	19.7	5.03	11.4
179:5	Guan	Guan	Whole	4		Sandy	Friable	179:5	19.9	5.76	13
207:1	Guan w/lid	Guan w/lid	Whole	5	2	Sandy	Friable	207:1	19.5	5.02	10.3
206:3	Guan w/lid	Guan w/lid	Whole	5	2	Sandy	Friable	206:3	20.6	5.08	12.2
181:2	Guan	Guan	Whole	5	3	Sandy	Friable	181:2	18.5	10.3	4.49
206	Guan	Whole	Whole	5	2	Sandy	Friable	206	13.8	3.73	9.8
128:18-1	Guan w/lid	no	Whole	4	0			128:18-1	19.7	5	11.1
180:10-1	Guan w/lid	no	Whole	5	0			180:10-1	20	5	11.83
265:10	Guan	Guan	Incomplete	6	2	Sandy	Compact	265:10		5.25	
84:4	Guan	Guan	Incomplete	3		Sandy	Friable	84:4			10
265:16	Guan	Guan	Incomplete	6	2	Sandy	Friable	265:16		6.28	
256:23	Guan	Guan	Incomplete	6	2	Sandy	Friable	256:23		4.11	
268:7	Guan	Guan	Incomplete	6	2	Sandy	Friable	268:7		3.4	
83:3	Guan	Guan	Incomplete	3	3	Sandy	Friable	83:3		4.04	
147:1	Guan	Guan	Incomplete	4		Sandy	Compact	147:1		3.44	
165:1	Guan	Guan	Incomplete	4	3	Sandy	Friable	165:1		6.06	
163:12	Guan	Guan	Incomplete	4	3	Sandy	Friable	163:12		5.45	
279:20	Guan	Guan	Incomplete	6	1	Sandy	Friable	279:20		6.14	
97:1	Guan	Guan	Incomplete	4	3	Sandy	Friable	97:1		4.74	
158:3	Guan	Guan	Incomplete	4		Sandy	Friable	158:3		4.64	

Appendix 8: Batatai Guan-jar Coding

Vessel #	Mouth Diameter	Max Diameter	Base diameter	Ht to max diameter	Rim thicknes	Rim Angle	Leg height	Leg Width	Leg angle	Ruding
184:2	15.8	16.7	7.62	9.5	0.93	73				
241:4	15	14.7	7.21	10	0.44	72				
241:2	16.4	18	7.79	10.5	0.46	72				
160:2	14.6	14.5	7.77	8	0.42	74				
139	15.3	13.9	7.72	8	0.51	71				
280:10-1	15.7	16.2	7.2	9.5	0.47	71				
163:4	8.83			6	0.51	81				
205:6	13.8	15.3	6.59	8.8	0.43	69				
242:6	14	15	6.85	8	0.42	70				
119:5	14.6	19.4	7.84	13	0.48	71				
227:2	16.3	18.5	7.87	11	0.49	65				
178:14	15.5	15.3	7.31	9	0.76					
183:4	18.4	17.3	7.85	10	0.46	69				
203:5	15.4	15.5	7.95	8.3	0.42	72				
179:5	17.5	17	7.95	9.2	0.48					
207:1	15.37	15.2	6.7	9	0.36	70				
206:3	16.9	17	6.45	10.8	0.45	71				
181:2	13.7	13.2	7.15	8.9	0.59	66				
206	11.82	13.7	5.95	6.5	0.48	70				
128:18-1	15	14.85	6.42	7.86	0	0	0	0	0	0
180:10-1	15.83	16.3	6.67	8.3		71	0	0	0	0
265:10	20		9		0.44	69				
84:4			10							
265:16	20		9		0.43	75				
256:23	15		12		0.37	72				
268:7	21		9		0.38	65				
83:3	18				0.47	81				
147:1	14		9		0.43	73				
165:1	18		8		0.48	71				
163:12	20				0.45	70				
279:20	15		8		0.43	73				1
97:1	19		8		0.47	77				
158:3	14				0.37	80				

Appendix 8: Batatai Guan-jar Coding

Vessel #	loop length	Width of rud	Loop handle
184:2			
241:4			
241:2			
160:2			
139			
280:10-1			
163:4			
205:6			
242:6			
119:5			
227:2			
178:14			
183:4			
203:5			
179:5			
207:1			
206:3			
181:2			
206			
128:18-1	0	0	0
180:10-1	0	0	0
265:10			
84:4			
265:16			
256:23			
268:7	1.56	0.68	1
83:3			
147:1			
165:1			
163:12			
279:20	1.36	0.87	
97:1			
158:3			

Appendix 9: Batatai Flared jar Coding

Vessel #	Type	Report Type	Condition	eason of Exc.	Phase	Paste Texture	Paste Density
275:8	LBK	Guan A	Incomplete	6		Silt	Compact
164	LBK	Guan A	Incomplete	4		Silt	Compact
206:1	LBK		Incomplete	5	2	Sandy	Compact
268:3	Lbk		Incomplete	6	2	Sandy	Friable
265:20	Lbk	A	Incomplete	6	2	Silty	Compact
269:2	Lbk	A	Incomplete	6		Sandy	Compact
265:17	Lbk	A	Incomplete	6	2	Silty	Compact
100:2	Lbk	A	Incomplete	4		Sandy	Compact
163:2	Lbk	A	Incomplete	4	3	Silt	Compact
268:4	Lbk	B	Incomplete	6	2	Sandy	Friable
265:21	Lbk	A	Incomplete	6	2	Silty	Compact
261:13	Lbk	A	Incomplete	6		Silty	Compact
119:4	Lbk	zun	Incomplete	4	3	Silt	Compact
268:6	Lbk	A	Incomplete	6	2	Sandy	Friable
205:5	Lbk	A	Incomplete	5	2	Sandy	Compact
265:18	Lbk	A	Incomplete	6	2	Silty	Compact
99:2	Lbk	A	Incomplete	4		Silt	Compact
207:5	Lbk	A	Incomplete	5	2	Sandy	Friable
158:2	Lbk	A	Incomplete	4		Sandy	Friable
79:4	Lbk	A	Incomplete	3		Silt	Compact
265:19	LBK	Guan	Incomplete	6	2	Sandy	Compact
241:3	Lbk	A	Incomplete	6		Silty	Compact
197:4	Lbk	A	Incomplete	5	3	Sandy	Compact
279:17	Lbk	small	Incomplete	6	1	Silt	Compact
84:5	Lbk	A	Whole	3		Silt	Compact
280:14	Lbk	A	Whole	6	1	Silt	Compact
279:10	Lbk	B	Whole	6	1	Silt	Compact
165:6	Lbk	A	Whole	4	3	Sandy	Compact
160:3	Lbk	A	Whole	4			
246:5	Lbk	B	Whole	6	2	Silt	Compact
241:1	Lbk	A	Whole	6		Silt	Compact
108:2	Lbk	B	Whole	4	3		
265:7	LBK	B2	Whole	6	2	Sandy/silt	Compact
206:2	Lbk	A	Whole	5	2	Sandy	Friable
183:2	LBK	A	Whole	5	3	Silt	Compact
279:15	Lbk	A	Whole	6	1	Silt	Compact
93:1	Lbk	B	Whole	3	3	Sandy	Friable
206:4	LBK	Guan	Whole	5	2	Sandy	Friable
9	Lbk	A	Whole	1		Silt	Compact
227:3	LBK	A	Whole	6	2	Silt	Compact
178:15	LBK	A	Whole	4	3		
203:2	LBK	small jar	Whole	5	2	Silt	Compact
203:6	LBK	A	Whole	5	2	Silt	Compact
279:13	LBK	B	Whole	6	1	Silt	Compact
181:5	Lbk	A	Whole	5	3	Sandy	Friable

Appendix 9: Batatai Flared jar Coding

Vessel #	Vessel Ht	Neck Ht	Neck Width	Mouth Diameter	Max Diameter	Base diameter
275:8		4.24	13	19		
164		3.49		29		
206:1		7		15		
268:3						7
265:20		8.61		24		10
269:2		7.59		25		
265:17		5.68		15		
100:2		6.19		21		11
163:2						
268:4		5.89				6
265:21		9.2		21		
261:13		6.74		20		
119:4		10.09		22		10
268:6		2.32	13			9
205:5		7.6		24		11
265:18		9.77	19	23		9
99:2		7.3				
207:5						
158:2		3.65				
79:4		6.4		22		8
265:19		8.83		23		13
241:3		6.1	10.9	15		7
197:4		8.6		18		10
279:17		3.88	5.24	7.6		
84:5	24	6.6	10.6	16.2	13	6.38
280:14	28.1	9.28	13.7	20.3	18.1	
279:10	17.4	6.57	7.38	12.79	10.4	6.15
165:6	29.3	9.41	9.5	18.3	17.4	7.96
160:3	27	9.17	10.2	18.4		7.64
246:5	18.1	5.52	6.84	9.15	10.3	5
241:1	28.1	9.08	8.4	19.6	17.1	7.5
108:2	17.7	5.41	8.48	11.29		6.28
265:7	19.2	6.15	8.9	14.3	11.8	5.96
206:2	30	9.58	10.4	20.9	17.7	8.2
183:2	30.5	11.3	13.7	22.9	18.3	7.6
279:15	29	9.16	10.3	19.6	16	6.8
93:1	20.9	9.6	7.06	15.5	12.7	6.43
206:4	17.4	6.21	8.1	12	10.4	5.45
9	23.4	8.64	11.4	17.9	14.3	7.35
227:3	27.5	8.41	9.4	17.4	15.7	7.82
178:15	26.1	6.97	10.6	19.8	16.8	7.6
203:2	23.6	7.26	8.9	14.5	12.6	6.57
203:6	30.2	9.03	11.6	19.1	17.7	8
279:13	19.1	6.23	9.3	13.3	12.3	5.6
181:5	26.6	7.72	12.2	18	16.2	7.8

Appendix 9: Batatai Flared jar Coding

Vessel #	Ht to max diameter	Rim thicknes	Rim Angle	Decor location	Decoration te	collar #of column
275:8		0.43	78	collar	incised	
164		0.47	78	collar, shoulder	incised	
206:1		0.74				
268:3						
265:20						
269:2		0.57	70	collar,neck	incised	
265:17		0.5	75			
100:2		0.47	80	Collar,neck	incised	
163:2		0.41	75	collar,neck,shoul	incised	
268:4		0.35	85	collar	incised	
265:21		0.45	73	collar	incised	
261:13		0.44	75	Collar	incised	
119:4		0.48	76	collar, neck,shou	incised	
268:6		0.51				
205:5		0.56	78	collar	incised	
265:18		0.53	75	collar,shoulder	incised	
99:2		0.5	78	collar, shoulder	incised	
207:5			79	collar,neck	incised	
158:2		0.45		collar,neck,shoul	incised	
79:4		0.48	70	collar,neck	incised	
265:19		0.55	77			
241:3		0.47	74	collar	incised	
197:4		0.42	76	collar	incised	
279:17		0.38	74	collar,neck	incised	6
84:5	9.3	0.49	65	neck	incised	
280:14	13	0.48	70	collar	incised	8
279:10	7.9	0.48	73	collar	incised	7
165:6	12	0.54	75	collar,neck	incised	
160:3	11.5	0.44	73	neck, shoulder	incised	
246:5	8.5	0.42	82	Collar,neck,shou	incised	
241:1	13.2	0.45	69	Collar,neck,shou	incised	0
108:2	8		74	Neck, shoulder	incised	
265:7	8.6	0.46	70	collar	incised	11
206:2	12	0.49	72	collar	incised	9
183:2	10.5	0.52	70	Collar,neck,shou	incise	12
279:15	11.8	0.56	72	collar, neck, shou	incised	10
93:1	8.6	0.43	75	Collar	incised	8
206:4	7.3	0.43	74			
9	12	0.52	70	Collar, neck	incised	
227:3	11.5	0.42	70	Collar,neck,shou	incised	9
178:15	11	0.37	68	neck, shoulder	incised	0
203:2	10	0.49	70	Collar	incised	10
203:6	11.7	0.5	72	Collar, neck, sho	incised	9
279:13	8	0.46	73	collar, neck, shou	incised	9
181:5	10.5	0.49	74	Collar,neck	incise	6

Appendix 9: Batatai Flared jar Coding

Vessel #	Length of line	Neck element t	#row neck	#band should	#row/band	#elements	shoulder element
275:8							
164	3			1	2	1	2
206:1							
268:3							
265:20							
269:2		9	1				
265:17							
100:2	3.6	Rs/W	2				
163:2	4	W	3	1	9	1	1
268:4							
265:21	2.7						
261:13	4.5						
119:4	4	2	3	1	1	1	1
268:6							
205:5	3.5						
265:18	5	Rslash,Wave	2	1	3	3	2
99:2	3.7			1	2	1	2
207:5	1.6	9	1				
158:2	5	Reye	1	1	2	1	1
79:4	6.5	10	3	0			
265:19							
241:3	3.4						
197:4	4.8						
279:17	3	10	4				
84:5		11	2				
280:14	5.3						
279:10	2.5						
165:6	3.7	Rs/L	2				
160:3		Heye,L	4	1	2	1	2
246:5	2.5	9	1	1	2	1	2
241:1	6	9	1	1	2	1	2
108:2		9	1	1	3	2	10
265:7	2.3						
206:2	4.2						
183:2	5	8	3	1	2	1	1
279:15	3.42	9	1	1	2	1	2
93:1	3.2		0	0	0	0	0
206:4							
9	1	2	2	0	0	0	0
227:3	4	6	1	1	2	1	1
178:15		9	1	1	1	1	2
203:2							
203:6	6	W, Heye	4	1	2	1	2
279:13		9	1	1	2	1	2
181:5	3		0	0	0	1	9

Appendix 9: Batatai Flared jar Coding

Vessel #	Element Orga	Total bands	Total rows	Combinedelements	Composite design
275:8					
164					
206:1					
268:3					
265:20					
269:2		1	1	1	Rs
265:17					
100:2	enclosed	1	2	2	Rs/W
163:2	enclosed	2	12	2	W/L
268:4					
265:21					
261:13					
119:4	enclosed	1	4	2	W/L
268:6					
205:5					
265:18	enclosed	1	2	3	Rs/W/X
99:2	enclosed	1	2	1	W
207:5			1	1	Rs
158:2	enclosed	2	3	2	Reye/L
79:4	enclosed	1	3	2	L/W/L
265:19					
241:3					
197:4					
279:17	enclosed	1	4	2	L/W/L
84:5	enclosed	1	2	2	L/S/L/S/L
280:14					
279:10					
165:6	enclosed		2	2	Rs/L
160:3	enclosed	1	6	3	Heye/L/W
246:5	open	2	3	2	Rs/W
241:1	open	2	4	2	Rs/W
108:2	open	2	4	3	Rs/W/L/W
265:7				1	1
206:2				1	1
183:2	enclosed	1	2	2	S/L
279:15	open	2	2	2	Rs/W
93:1	open	0	0	1	1
206:4					
9	open	1	2	1	1
227:3	enclosed	1	2	2	Reye/L
178:15	enclosed	1	2	2	Rs/W
203:2					
203:6	open	2	5	2	W/Heye/W
279:13	enclosed	1	3	2	Rs/W
181:5	open	0	1	1	1

Appendix 9: Batatai Flared jar Coding

Vessel #	Ruding	Length of loop
275:8	2	0.63
164		
206:1		
268:3		
265:20	2	1.73
269:2		
265:17		
100:2		
163:2		
268:4		
265:21		
261:13		
119:4	1	1.86
268:6		
205:5		
265:18		
99:2		
207:5		
158:2		
79:4		
265:19		
241:3		
197:4		
279:17	2	1.3
84:5	1	1.57
280:14		
279:10		
165:6	2	2.21
160:3		
246:5		
241:1	0	0
108:2	0	0
265:7	2	0.73
206:2		
183:2	2	1.96
279:15	1	1.88
93:1	0	0
206:4		
9	1	1.37
227:3	2	1.23
178:15	3	1.77
203:2		
203:6	1	2.2
279:13	0	0
181:5	0	0

Appendix 10: Batatai Halberd Coding

Vessel #	Report Type	Season of Ex	Phase	Condition	Length	Max Width	Min Width
118:1	B	4	3	Whole	23.7	3	1
127:1	A	4		Whole?	0	0	0
140:2	A	4		Whole	29.8	6.5	1.5
141:1	A	4	3	Whole	33.6	6.4	1.3
143:1	Aa	4	3	Whole	24.4	6.4	2.1
177:1	A	4	3	Whole	30	7.2	2
178:1	A	4	3	Incomplete	0	5.8	0
178:18	A	4	3	Whole	31.3	5.2	1.8
180:1	A	5	3	Whole	30.5	6.9	1.5
181:7	A	5	3	Whole	31.6	6.4	1.5
183:7	A	5	3	Whole	31.4	6.2	1.5
191:2	A	5	3	Whole	28.8	0	0
202:1	Bd	5	2	Whole	32.44	9.3	2.19
206:6	A	5	2	Whole	27.5	5.25	1.75
208:2	Bd	5	2	Whole	22	6.2	1.4
209:2	A	5	2	Whole	32.5	6.2	1.5
21:1	Bb	1		Whole	23.6	5.7	1.4
211:2	A	5	2	Whole	26.3	6.3	1.4
213:3	A	5	2	Incomplete	0	0	0
213:7	Ba	5	2	Whole	31.9	7.2	1.2
216:1	Bd	5	2	Incomplete	0	4.8	0
218:2	Ab	5	2	Whole	26.9	6.1	1.9
219:5	A	5	2	Whole	30.5	5.5	1.3
224:3	A	6	2	Whole	31.5	5.4	1.4
225:2	B	6	2	Incomplete	0	6.3	0
229:1	Bd	6	2	Whole	25.8	5.6	1.5
243:1	Ba	6	2	Whole	27.2	5.8	1.4
246:4	B	6	2	Whole	26.1	4.2	1.5
25:2	Aa	2	4	Whole	22.6	3.8	1.5
261:1	Bd	6	2	Whole	22.7	6.1	0
265:27	A	6	2	Whole	32.9	5.5	0.9
266:1	Bd	6	2	Whole	24.5	5.3	1.3
271:1	Bc	6		Incomplete	21	0	0
275:7	A	6		Incomplete	0	0	0
279:3	A	6	1	Whole	33.3	6.1	1.6
280:2	A	6	1	Whole	23.7	3.8	0
285:1	Bc	6	1	Whole	27.7	5.9	1.6
296:3		6	1	Whole	24.8	5.7	0
306:2	A	6	1	Incomplete	0	3.8	2
325:1	Ba	6	1	Incomplete	0	0	0
38:1	Aa	2	4	Whole	19.2	6.6	1.2
4:1	A	1	4	Whole	33.3	6.2	1.5
41:21	Bb	3	4	Whole	23.6	4.6	1.1
81:5	Aa	3	3	Incomplete	23.1	5.5	1.4
95:2	Aa	4	4	Whole	24.3	6	1.7

Appendix 10: Batatai Halberd Coding

Vessel #	Hilt Length	Hilt Width	Hilthole wdth	Hilthole ht	adethickness	Bladehole_wdth	Crossection
118:1	6.2	12.8	0	0	0.56	0	0
127:1	0	0	0	0	0.82	0	0
140:2	6.4	8	4.2	6.2	0.61	2.1	1
141:1	6.6	7.4	4.1	6.6	0.75	3	1
143:1	5.7	10	5.2	5.4	0.62	1.3	1
177:1	7	8.7	4.5	7.3	0.66	2.7	2
178:1	4.3	6.2	4.3	5.9	0.52	2.4	2
178:18	6.6	8.5	3.8	6.5	0.61	2.5	2
180:1	7	9.6	4.4	6.6	0.81	2.8	2
181:7	6.8	9.1	4.4	6.6	0.9	2.6	2
183:7	6.2	8.1	4.1	6.9	0.75	3	2
191:2	6.6	7.4	0	0	0.61	0	0
202:1	5	6.4	0	0	0.8	0	2
206:6	6.2	7	4	6.25	0.5	2.4	2
208:2	6.2	8.5	4.6	6	0.53	2.2	2
209:2	6.5	7	4.7	7	0.91	3	2
21:1	6.6	8.5	3.6	6.3	0.39	2	1
211:2	7.3	7.7	4.5	7.2	0.67	2.3	2
213:3	6.3	7.4	0	0	0.75	0	2
213:7	7	9	4.6	7	0.75	2.3	2
216:1	0	0	4.1	4.9	0.63	1.6	2
218:2	6.4	8.7	4.3	6.4	1	3	2
219:5	0	6.8	0	5.5	4.3	2	2
224:3	6.6	6.8		1.9	0.93	1.9	2
225:2	6.5		4.2	6.7	0.85	2.6	2
229:1	6	8.5	3.75	5.5	0.74	2.25	2
243:1	5.8	8.3	3.9	5.8	0.71	2.4	2
246:4	7.4	8.7	3.2	5	0.89	0.9	2
25:2	5.2	9.7	3.1	3.7	0.45	1.8	3
261:1	5.9	7.8	4.5	5.7	0.57	1.4	2
265:27	5.5	7.1	4.1	7.5	0.93	2.2	2
266:1	6.3	7	4.1	6.5	0.59	2.5	2
271:1	6	8.5	4	5.75	0.6	2.75	2
275:7	0	0	3.9	6.2	0.69	0	2
279:3	6.8	6.9	4.2	6.6	0.78	2.3	2
280:2	6.5	7	2.7	4.6	0.77	1.8	2
285:1	7.3	7.5	4.6	7.2	0.61	3.1	2
296:3	5.4	7.5	3.5	5.2	0.62	1	2
306:2	0	0	0	0	0.58	0	
325:1	0	0	0	0	0.73	0	2
38:1	5.1	8.8	4.2	6.1	0.58	1.8	1
4:1	6.8	6.9	4.7	7.2	0.84	2.5	0
41:21	6.6	8.8	4	6.63	0.45	2.75	1
81:5	5.1	8.8	3.9	4.7	0.51	0.8	1
95:2	5.5	9.3	4.6	4.6	0.6	0	1

Appendix 10: Batatai Halberd Coding

Vessel #	Weight	Hilt Shape	Blade Shape	Hilt Decorati	Blade Decora	Comments
118:1	2.2	0	0	0	0	Hilt Guard
127:1	2.92	0	0	0	0	
140:2	1.82	3	1	1	1	
141:1	2.9	3	1	1	1	
143:1	2.86	3	2	3	2	like95:2
177:1	3.06	3	1	1	1	
178:1	1.42	3	1	1	1	
178:18	2.48	3	1	1	1	
180:1	3.38	3	1	1	1	
181:7	3.08	3	1	1	1	
183:7	2.58	3	1	1	1	
191:2	1.42	3	1	1	1	
202:1	3.08	2	1	3	2	
206:6	2.16	2	1	2	3	Asymmetrica
208:2	1.38	2	1	3	2	
209:2	2.84	3	1	1	1	
21:1	1.66	2	1	1	1	
211:2	2.04	3	1	4	5	
213:3	2.22	3	1	1	1	
213:7	3.34	2	1	2	2	
216:1	1.16	2	1	3	2	
218:2	2.48	3	1	3	2	
219:5	3.06	3	1	1	1	
224:3	3.28	3	1	1	1	
225:2	1.9	3	1	4	4	like 246:4
229:1	1.9	2	1	3	2	
243:1	2.12	2	1	2	3	
246:4	2.14	3	1	4	4	like 225:2
25:2	2.39	3	2	6	2	Spiral
261:1	1.94	2	1	3	2	
265:27	2.6	3	1	1	2	
266:1	1.56	2	1	4	2	
271:1	1.56	2	1	6	2	Triangle
275:7	1.7	2	1	1	1	
279:3	2.8	3	1	1	1	
280:2	2.18	3	1	1	1	
285:1	2.04	2	1	6	2	Xmark
296:3	1.4	2	1	3	2	
306:2	1.06	0	0	0	0	like 206:6
325:1	1.22	0	0	0	3	
38:1	1.7	2	1	1	4	
4:1	2.72	3	1	1	1	mound 1
41:21	2.08	2	1	5	4	
81:5	2.84	3	2	3	2	like 95:2
95:2	2.96	3	2	3	2	like143:1

Appendix 11: Batatai Sword Coding

Vessel #	Report Type	Season of Ex	Phase	Condition	Sword Lengt	Max Width	Min Width	Vessel #	Max/Min	Handle Leng	Handle/Sword	Width of Dist
177:3	Aa1	4	3	Whole	29.4	4.15	1.51	177:3	2.74834437	8.22	0.279591837	3.29
205:1	Aa1	5	2	Whole	26.5	2.33		205:1		6.47	0.244150943	
206:9	Aa1	5	2	Whole	30.4	3.8	1	206:9	3.8	9	0.296052632	3.3
219:4	Aa1	5	2	Whole	31.3	3.9	0.9	219:4	4.33333333	9.5	0.303514377	3.4
279:6	Aa1	6	1	Whole	36.6	3.46	1.55	279:6	2.23225806	9.5	0.259562842	3.27
280:5	Aa1	6	1	Whole	31.5	3.65	1.4	280:5	2.60714286	10	0.317460317	2.27
117:2	Aa2	4	3	Whole	23	3.7	1.2	117:2	3.08333333	8	0.347826087	2.7
129:2	Aa2	4	3	Whole	28.6	4.2	1.2	129:2	3.5	7.1	0.248251748	1.8
178:25	Aa2	4	3	Whole	32.7	3.92	1.41	178:25	2.78014184	8.11	0.248012232	1.74
180:1	Aa2	5	3	Whole	30.9	4.1	1.3	180:1	3.15384615	9.7	0.313915858	3.25
181:8	Aa2	5	3	Whole	32.8	4.54	1.5	181:8	3.02666667	7.08	0.215853659	3.39
83:1	Aa2	3	3	Whole	26.8	3.5	0.97	83:1	3.60824742	9.6	0.358208955	2.52
158:1	Aa3	4		Whole	30.3	4.01	1.9	158:1	2.11052632	9.4	0.310231023	3
183:4-1	Aa3	5	3	Whole	34.1	4.52	1.4	183:4-1	3.22857143	10	0.293255132	3.56
59:1	Aa4	3	4	Whole	30.9	4.32	1.8	59:1	2.4	10.8	0.349514563	1.97
141:2	Ab	4	3	Whole	33.3	5.2	1.4	141:2	3.71428571	9.3	0.279279279	3.41
209:1	Ac	5	2	Whole	35.5	3.3	1.3	209:1	2.53846154	8	0.225352113	2.7
265:28	Ac	6	2	Whole	25	2.38	1	265:28	2.38	6.98	0.2792	0
275:5	Ac	6		Incomplete	21.4	12.1	3.1	275:5	3.90322581	0	0	0
81:2	B1	3	3	Whole	22.7	0	0	81:2		9	0.396475771	
95:1	B1	4	4	Whole	26.5	4.73	1.33	95:1	3.55639098	8.6	0.324528302	3.24
41:2-1	B2	3	4	Whole	24.9	4.8	0.9	41:2-1	5.33333333	8.8	0.353413655	3.1
67:1	B2	3		Whole	23.6	0	0	67:1		9.1	0.38559322	0
35:1	B3	2	4	Whole	25.07	5.9	1.1	35:1	5.36363636	7.3	0.291184683	2
41:2	B3	3	4	Whole	22.2	3.6	1.1	41:2	3.27272727	6.51	0.293243243	1.9
41:3	B3	3	4	Incomplete	0	3.7	0	41:3		8.3		2.72
225:1		6	2	Whole	20.66	0	0	225:1		5.46	0.2642788	1.98
285:2		6	1	Whole	28.5	3.65	1.15	285:2	3.17391304	8.7	0.305263158	2.97
75:1		3	3	Whole	31.5	5.3	1.2	75:1	4.41666667	10.7	0.33968254	1.7

Appendix 11: Batatai Sword Coding

Vessel #	Height of Proximal End	Décor Heigh	Décor/Handl	Blade Thickn	Weight	Hilt Guard	mmel Shape	Blade Shape	Blade Spine	Blade Holes	Pommel Desig
177:3	2.05	1.6	0.1946472	0.87	2.46	0	1	1	0	1	2
205:1	3.65			0.68	2.24	0	1	1	1	0	
206:9	2.1	1.1	0.12222222	0.72	2.26	0	1	1	1	0	2
219:4	1.9	1.8	0.18947368	0.82	2.18	0	1	1	1	0	2
279:6	2.07	1.8	0.18947368	0.81	2.52	0	1	1	1	0	2
280:5	3.39	1.8	0.18	0.87	2.86	0	1	1	1	0	2
117:2	1.6	1.6	0.2	0.7	1.48	0	1	1	1	0	2
129:2	2.9	2	0.28169014	0.61	1.7	0	1	1	0	0	2
178:25	3.03	2.2	0.27127004	0.74	1.98	0	1	1	1	0	2
180:1	1.9	2.4	0.24742268	0.77	2.42	0	1	1	1	0	2
181:8	1.86	2.4	0.33898305	0.83	2.76	0	1	1	1	0	2
83:1	1.64	3.2	0.33333333	0.73	1.72	0	1	1	1	1	1
158:1	2.13			0.57	2.24	0	1		1	0	2
183:4-1	2.02	2.6	0.26	0.8	2.64	0	1	1	1	1	2
59:1	3.32	4.4	0.40740741	0.78	2.88	0	1	1	1	1	2
141:2	2.06	2	0.21505376	0.68	2.38	0	1	1	1	0	2
209:1	1.9			0.76	1.88	0	1	1	1	0	1
265:28	0			0.8	1.28	0			1	0	
275:5	0			0.68	0.86	0	0	0	0	0	0
81:2	2.23			0.45	1.38	1	2	2	0	0	1
95:1	2.71			0.88	2.3	1	2	2	0	0	1
41:2-1	6			0.39	1.28	1	2	2	0	0	1
67:1	0			0.58	1.54	1	2	2	1	0	1
35:1	2.1			0.43	1.12	1	3	2	0	0	3
41:2	2.1			0.51	1.16	1	2	2	0	0	1
41:3	1.9				1.18	1			0	0	1
225:1	2.45			0.48	0.76	0	1	1			1
285:2	2.47			0.72	1.6	0	1	1	1	0	1
75:1	2.5			0.79	3.48	0	1	3	1	0	3

Appendix 11: Batatai Sword Coding

Vessel #	Bands	Elements	Trident Pron	Type of Dec	Comment
177:3	1	1	0		
205:1	1	1	0	Frog	
206:9	1	1	1	Frog	
219:4	1	1	0	Frog	
279:6	1	1	0	Frog	
280:5	1	1	0	Frog	
117:2	1	1	0	Frog	
129:2	1	1	0	Frog	
178:25	1	1	0	Frog	
180:1	1	1	0	Frog	
181:8	1	1	0	Frog	
83:1	2	2	0	Frog,circle	like59:1
158:1	1	1	0	Frog	
183:4-1	1	1	0	Frog	
59:1	2	2	0	Frog	like83:1
141:2	1	1	0	Cloud	
209:1			0	Plain	
265:28			1		
275:5	0	0	0		Handle missi
81:2	4	2	0	Spiral,hatch	
95:1	0	0	0		
41:2-1	0	0	0		
67:1	9	4	0	Braid,hatch,teeth	
35:1	3	2	0	Spiral	
41:2	4	4	1	Spiral,circles	
41:3	3	5	0	Spiral,hatch,braid	
225:1		0			
285:2	0	0	0		
75:1	3	2	0	Spiral,mask	

Appendix 12: Batatai Blade Coding

Vessel #	Report Type	Season o	Phase	Sword Length	Max Width	Min Width	Handle Length	e Thickness	Weight	Shape	Blade Spine	Notch	Trident P
4:3	III	1	4	19.9	2.1	1.2	4.6	0.48	0.52	1	1	0	0
37:3	III	2	4	11.4	3.3	0.7	4.1	0.24	0.2	1	0	0	0
37:1	III	2	4	12.5	3	1.15	3.5	0.51	0.4	0	0	0	0
345:1	I	6		21.5	3.1	0.8	4	0.59	0.96	1	1	0	0
328:1	I	6	1	22.3	2.1	1	2.6	0.58	0.82	1	1	0	0
296:4	I	6	1	20.4	3.2	1.1	5	0.54	0.76	1	1	0	0
266:2	II	6	2	18	3.5	0.85	4.3	0.46	0.48	1	2	0	0
261:2		6	2	23.1	3.8	1.2	5	0.76	1.06	1	2	0	0
243:2	II	6	2	21.8	3.8	1	4.6	0.61	1.06	2	2	0	1
229:4	II	6	2				5	0.43	0.54	2		0	0
229:3	II	6	2	22	3.9	1.2	3.5	0.58	1.14	1	2	0	0
224:1	II	6	2	26.4	4	1.4	4.5	0.72	1.5	1	2	0	0
218:1	II	5	2	21.6	3.9	1.2	4.8	0.66	1.22	1	1	0	0
211:1		5	2	19	2.9	1	4.2	0.51	0.6	1	0	0	0
208:1	II	5	2	22.6	3.65	1	4.5	0.72	1.18	2	2	0	1
202:2	II	5	2	19.2	3.4		4.5	0.77	0.7	2	2	0	1
191:4		5		24.9	3.4	0.75	5.15	0.6	1.06	1	0	0	0
187:1	III	5	3		4.2			0.5	0.42	2	2	1	1
179:2	III	4	3	26.5	4.1	0.9	5.1	0.76	1.52	2	2	0	0
175:1	II	4	3	27.4	4.3	1.5	4.8	0.62	1.48	1	1	1	0
170:1	III	4	3	18.7	3.2	1.5	5.3	0.55	0.68	1	1	1	0
169:1	III	4	3	24	4.9	1.2	5	0.58	1.1	2	0	1	1
167:1	III	4	3				5.2	0.53	0.76		0	0	1
149:1	III	4	3	15.3			4.6	0.56	0.38	2	0	0	0
136:1	III	4	3	19.1	3.2	1.1	6.5	0.56	0.78	2	0	1	0
118:7	II	4	3	17.4	3.4	1.3	4.5	0.52	0.76	2	0	1	0
117:1	III	4	3	18.5	3.5	1.2	5.3	0.59	0.74	2	0	1	1

Appendix 13: Batatai Knife Coding

Vessel#	Report T	Season	Phase	Condition	Knife Length	Max Width	Min Width	Handle Widt	Handle Leng	Weight	Handle Shape	Blade Shape	Blade Decora
28:5	Cb	2	4	Whole	9.41	1.18		0.88	4.12	0	1	1	5
31:3	A	2	4	Whole	16.9	1.6	0.6	1.2	8.2	0.5	1	1	3
74	Ca	3		Incomplete	0	2.1	0	1.5	5.4	0.32	1	1	1
77:2	Ca	3		Whole	21.18	3.55	0.97	1.47	7.35	0.98	1	2	1
88	Ca	3		Whole	19.4	2.65	0.7	1.8	8.75	0.64	1	1	1
88:2	Ca	3		Whole	20.55	2.6	0.6	1.4	7.6	0.62	1	2	3
96:1	Ca	4		Whole	20.7	2.82	0.92	1.47	8.8	0.72	1	2	1
116:1	Cb	4		Whole	11.47	1.51	0.93	1	4.86	0.12	1	1	1
122:1	Ca	4		Incomplete		2.1		1.6	8.15	0.6	1	2	3
128:2	A	4		Whole	16	2.4	0.8	1.7	6	0.48	2	1	1
134	Cb	4		Incomplete		1.8		1.1	3.6	0.2	1	1	3
178:22	Cb	4		Incomplete	0	1.2	0	0.8	3.6	0.4	1	1	1
186:2	A	5		Whole	20.74	1.81	0.82	1.18	9.04	0.64	2	1	2
200	Cb	5		Incomplete				1.1	4.6		1	1	1
206:8	Ca	5	2	Whole	18.53	1.79	0.91	1.2	7.46	0.38	1	1	5
216:2	Ca	5	2	Whole	15.85	2.7	1	11.5	2.75	0.44	1	1	1
219:6	Cb	5	2	Whole	7.85	1.3	0.8	1	2.8	0.8	1	1	1
226:4	Ca	6		Incomplete		0	0	0	6.2	0.14		1	1

Appendix 14: Batatai Spear Coding

Vessel #	Report Type	Season of Ex	Phase	Condition	Spear Length	Max Width	Min Width	Neck width	Neck ht	Blade Ht	Blade Thickr	Base Diamet
67:2	Aa	3		Whole	11.8	3	1	1.7	8	3.8	0.82	3.2
35:2	Aa	2	4	Whole	12	2.9	1	1.75	7	5	0.95	2.8
37:2	Aa	2	4	Whole	9.2	1.9	0.6	1.2	3.9	5.3	0.66	1.85
143:2	Aa	4	3	Whole	13	2.1	0.9	1.4	7.5	5.5	0.84	2.9
38:2		2	4	Whole	13.8	1.8	0.8	1.2	8.3	5.5	0.75	1.8
81:4	Aa	3	3	Whole	12.8	2.7	1	1.5	7.1	5.7	0.77	2.4
68		3		Whole	13	2.1	1.1	1.4	7	6	0.87	2.1
25:6	Aa	2	4	Whole	13.7	2.86	1.19	1.43	7.6	6.1	0.77	2.86
27:4	Aa	2	4	Whole	13.6	2.2	0.8	1.4	7.4	6.2	0.65	2.85
31:2	Aa	2	4	Whole	13.2	2.5	0.9	1.4	6.6	6.6	0.8	
89:1	Ba	3		Whole	16	2.74	0.95	1.43	9.2	6.8	0.75	2.62
25:3	Aa	2	4	Whole	13.2	2.86	0.71	1.43	5.9	7.3	0.82	3.57
95:3	Ab	4	4	Whole	15	2.9	0.6	1.6	7.3	7.7	0.88	2.1
94:1	C	4		Whole	15.7	3	1.25	1.5	7.3	8.4	0.59	2.75
25:5	Ab	2	4	Whole	15.9	2.74	0.95	1.43	7.4	8.5	0.74	2.62
77:1	Yue	3		Whole	12.1	5	1.13	3.25	3.1	9	0.95	3.5
11:1	Ab	1	4	Whole	16.5	2.38	1.19	1.43	7.3	9.2	0.9	2.5
88:1	Ba	3		Whole	25.5	3.3	0.9	1.75	14.7	10.8	1.11	
25:4	Bb	2	4	Whole	23.8	3.1	1.25	1.75	12.3	11.5	0.98	2.38
52:1		3	4	Whole	19.4	3.4	0.9	1.9	7.6	11.8	0.98	2.4
148:1	Ba	4	3	Whole	24.5	3	1	1.5	12.1	12.4	1	2.7
176:1	Ba	4		Whole	24.5	3.1	1.07	1.43	11.7	12.8	0.88	2.62
69:3	Ab	3	4	Whole	38	2.4	1.4	0.95	23.2	14.8	0.85	2.4
41:1	Bb	3	4	Whole	34	3.8	1.4	1.7	16	18	1.28	2.4
69:3-2	Ab	3	4	Whole	38				23.2	14.8		
119:2	Ba	4		Whole	20.6				9	11.6		

Appendix 14: Batatai Spear Coding

Vessel #	Weight	Earloop	Shape of bas	Blade Shape	Neck Decora	Bands	Elements	Blade Decor	Comment
67:2	1.1	0	2	1	1	0	0	0	
35:2	0.68	0	2	1	1	0	0	0	
37:2	0.28	0	2	1	1	0	0	0	
143:2	0.7	0	2	1	1	0	0	0	
38:2	0.6	0	1	3	0	0	0	0	
81:4	0.56	0	2	1	0	0	0	0	
68	0.78	0	1	1	1	0	0	0	
25:6	0.62	0	2	1	2	0	1	0	
27:4	0.42	0	2	1	1	0	0	0	
31:2	0.5	0	2	1	1	0	0	0	
89:1	0.7	2	2	1	1	0	0	0	
25:3	0.5	0	2	1	1	0	0	0	
95:3	0.76	0	1	1	1	0	0	0	
94:1	0.74	1	2	2	1	0	0	0	
25:5	0.92	0	1	1	1	0	0	0	
77:1	1.08	0	3	2	1	0	0	1	Mask
11:1	1.18	0	1	3	3	1	1	0	
88:1	1.52	2	2	2	1	0	0	0	
25:4	1.58	2	1	2	1	0	0	0	
52:1	0.88	0	1	1	1	0	0	0	
148:1	1.2	2	2	2	1	0	0	0	
176:1	1.32	2	2	1	3	1	1	0	
69:3	3.36	0	1	3	1	0	0	0	
41:1	2.3	2	1	2	4	5	4	0	
69:3-2		0	1	3	1	0	0	0	
119:2		2	2	1	1	0	0	0	

Appendix 15: Batatai Chise/Ax Coding

Vessel #	Type	Report Type	Season of Ex	Phase	Weight	Comment
4	Crossbow		1	4	0	
4:2	Pick		1	4	0	
6:7	IronAx	B	1	4	0	Small
8:1	Chisel		1		0.64	
19:1	Chisel		1		0.76	
23:1	IronAx	A	2	4	0	Large
23:2	Chisel	A	2	4	1.63	Iron
23:3	IronChisel		2	4	0	
24:1	IronAx	B	2	4	0	Small
25:1	Ax	B	2	4	0.94	Semicircle
26:1	IronKnife		2	4	0	Long
26:3	IronKnife		2	4	0	Short
27:2	Crossbow		2	0	0	
27:3	IronSpear		2	4	0	
27:6	Chisel	B	2		1.18	Square
27:7	IronChisel		2	4	0	
27:8	Ax	C	2	4	5.9	Square
28:1	IronSword		2	4	0	
28:2	IronSpear		2	4	0	
30:1	Crossbow		2	0	0	
46:4	IronPoint		3	4	0	
48:1	Crossbow		3	0	0	
51:7	IronAx	A	3	0	0	Large
69:11	Chisel		3	4	1.31	
69:2	Crossbow		3	4	0	
69:24	IronSword		3	4	0	
85:1	Ax	B	3		0.88	Semicircle
91:1	Ax	B	3		0.76	Semicircle
104:1	Chisel	B	4	0	0.78	Square
128:1	Chisel	A	4		1.26	Round
144:1	Ax	B	4	0	0	Semicircle
178:17	Pick		4	0	0	
206:1	Ax	A	5		0.72	Round
229:2	Ax	A	5		0.74	Round
279:1	Ax	A	6	1	1.12	Round

Appendix 16: Batatai Buckle Coding

Vessel #	Type	Report Type	SeasonExc	Phase	FaceDesign	Diameter	Weight	Comment
100:1	Peacock		4	3	0			
114:1	Lion	A	4	0	0	12.51		
121:1	Lion	B	4	0	0	12.65		
123:8	Monkey	C	4	0	0	10.9		
138:4	Face		4	0	0		0.048	Bit?
140:1	Monkey	C	4	0	0	9.5		
140:3	Plain		4	0	0		0.036	Bit?
143:1	House		4	3	0			
174	Monkey	C	4	0	0	9.5		
178:2	Monkey	C	4	3	0	9.4		
180:3	Lion	A	5	3	1	9.83		
182:6	Lion	A	5	0	1	8.72		
20:1	Belt Buck	Ab	1	4	0	10.6	0	Snakehead
219:1	Face		5	2	0		0.022	Bit?
219:3	Monkey	C	5	2	0	10.96		
24:2	Belt Buck	Short	2	4	0	5.6	0	
246:3	Monkey	C	6	2	0	9.81		
26:4	Belt Buck	Ab	2	4	0	13.6	0	Incised Snake
265:30	Monkey	C	6	2	0	10.7		
279:5	Lion	A	6	1	1	10.9		
31:5	Rectangle		2	4	0			like 76:1
41:4	TurquoiseBull	A	3	4	0	13.74		
47:5	Belt Buck	B	3	4	0	11	0	
47:9	Belt Buck	Short	3	4	0	3.6	0	
5:5	Belt Buck	Short	1	4	0	3.1	0	
50:2	Belt Buck	B	3	4	0	9	0.014	ridge
52	Belt Buck		3	4	0	7.6	0.018	No head
53:1	Belt Buck	B	3	3	0	7.6	0.02	
56:2	Belt Buck	Aa	3	3	0	12.3	0.042	
6:5	Belt Buck	Aa	1	4	0	9.4	0	ridge
60:1	Turquoise	B	3	0	0	5.05		
69:21	Doublebull		3	4	0			
7:4	BeltBuck	A	1	4	0	7.8	0.014	
76:1	Rectangle		3	0	0			like 31:5
81:1	Turquoise	A	3	3	0	12.63		
91:2	Bullhead		3	0	0			
94:3	Fish		4	0	0	0		

Appendix 17: Batatai Button Coding

Vessel #	Type	Report Type	Season of Ex	Phase	Surface	Design	Total number	Weight	Comment
18:1	Spiral	B	1		1	2	3	0.064	
21:131	Spiral	A	1	4	1	2	9	0.18	
31:6			2	4	0	0	0	0	Knob
32:7	Spiral	B	2	4	2	2	16	0.41	
71:1	Snake		3		2	1	1	0	
113:1	Snake		4		2	1	1	0	
119:1			4	3	0	0	4	0	Nipple
178:1	Snake		4	3	2	1	3	0.067	
183:14			5	3	0	0	2	0	Sheet
192:4	Spiral	A	5	3	2	2	1	0.036	
279:7	Spiral		6	1	2	3	1		
279	Snake						1		

Appendix 18: Batatai Bronze Bangle Coding

Vessel #	Repor	Season o	Phase	Surface	Thickness	Height	Diameter	Weight	Comment
5:2	A	1	5	1	0.74	0.65	6.9	0.012	
5:3_1	A	1	5	1	0.49	0.5	6.7	0.01	
5:3_2	A	1	5	1	0.47	0.7	6.8	0.018	
11:2	B	1	4	2	0.28	0.55	6.2	0.014	
12:3	C	1	4	3	1.25	0	9.58		
17:1	A	1	4	1	0.42	0.8	6.3	0.006	
18:2	C	1	0	2	0.1	0	3.2		
21:2	A	1	0	1	0.32	0.82	6.5	0.022	
23:4	A	2	4	1	0.37	0.65	7.3	0.022	
24:1	A	2	4	2	0.34	0.8	6.5	0.012	
24:2	A	2	4	1	0.27	0.7	6	0.008	
24:3	B	2	4	2	0.63	0	5		
30	C	2	0	2	0.23		7	0.01	
31	A	2	4	1	0.56	0.7	6.6	0.024	
32	B	2	4	3	1.18		8.7	0.018	
32:4_1	A	2	4	1	0.3	0.8	6.65	0.014	
32:4_2	A	2	4	1	0.53	0.8	6.45	0.024	
36:1_1	A	2	4	1	0.5	0.55	6.5	0.018	
36:1_2	A	2	4	1	0.29	0.65	6.5	0.012	
41:2	C	3	4	2	0.3		6.8	0.004	
44	C	3	4	2	0.13	0.2	5.7	0.006	2total
47:5	C	3	4	2	0.3		6.8	0.006	
48:1	A	3	4	1	0.43	0.7	6.6	0.022	
48:1_1	A	3	4	1	0.64	0.9	7.6	0.022	
48:1_2	A	3	4	1	0.52	0.9	7	0.022	
71:3	C	3	0	3	0.83	0	5.83		
90	A	3	4	1	0.34	0.7	6.8	0.01	
101		4	0	2			2.35	0.006	
102	C	4	0	2	0.29	0.5	7.1	0.014	
110		4	0	4	0.3	1.15	5.5	0.024	Cross
113:2	C	4	0	3	0.17	1.1	6.45	0.017	like JadeA
136	C	4	3	2	0.29		4.7	0.006	
183:2	B	5	3	2	0.63	0	3.13		

Appendix 19: Batatai Bronze Cookeries

Vessel#	height	mouth	max	weight
M90:3	19.8	20	22.9	2030
M8:1	12.7	10.9	14	640
M23:2	18	17.9	21.8	
m2:2	15.9	17	20.6	1170
M19:1	14.3	16.9	18.1	
M45:3	18.9	18.9	23.5	1710
m55:1				
m28:1	17.8	17.6	19.2	

Appendix 20: Batatai Han Coins

Burial	Type	Season of Ex	Phase	TotalCoins	Wushu	Daquan	Dapu	ReignPeriod	Weight	Comment
1	coins	1	0	98	97	1	0	WM	0.016	4 weight
3	coins	1	0	30	10	18	2	WM	0.048	12 weight
6	coins	1	0	28	28	0	0	E.Han	0.136	28 weight
7	coins	1	0	12	8	2	2	E.Han	0.046	12 weight
8	coins	1	0	20	20	0	0	XD2-YD	0.062	20 weight
9	coins	1	0	9	9	0	0		0.01	6 weight
10	coins	1	0	80	79	1	0	ZD,XD1,WM	0.268	77 weight
11	coins	1	0	25	0	25	0	WM	0.118	25 weight
12	coins	1	0	20	20	0	0	YD	0.034	11 weight
13	coins	1	0	5	5	0	0	WD,XD2	0.016	5 weight
14	coins	1	0	4	0	3	1	WM	0	
17	coins	1	0	9	9	0	0	ZD1	0.018	9 weight
18	coins	1	0	2	2	0	0		0	
20	coins	1	0	49	49	0	0	XD2,YD	0.148	43 weight
23	coins	2	0	4	4	0	0	ZD,E.Han	0.016	5 weight
24	coins	2	0	8	0	8	0	WM	0.058	8 weight
26	coins	2	0	21	21	0	0	XD2	0.082	21 weight
33	coins	2	0	18	18	0	0	WD,XD2	0.056	18 weight
42	coins	3	0	1	1	0	0	XD2	0.002	1 weight
43	coins	3	0	24	24	0	0	ZD,XD2,YD	0.068	24 weight
44	coins	3	0	5	5	0	0	ZD	0.012	5 weight
45	coins	3	0	6	2	4	0	ZD,WM	0.016	6 weight
50	coins	3	0	14	14	0	0	XD1,XD2	0.034	14
51	coins	3	0	5	5	0	0	XD2	0.018	5 weight
52	coins	3	0	32	32	0	0	XD2,YD	0.112	32 weight
61	coins	3	0	7	7	0	0	XD2	0.018	7 weight
63	coins	3	0	12	12	0	0	WD,XD2	0.036	12 weight
69	coins	3	0	12	12	0	0	WD,XD1-2	0.036	12 weight
90	coins	3	0	6	6	0	0	XD2	0.016	6 weight

Appendix 21: Batatai Jade Ornament Coding

Vessel#	Type	Report Type	Season of Ex	Phase	Type of mate	Beadshape	bangleshape	eardisc_profi
11:1	Bangle	E	1	4	Jade	0	2	
41:6	Bangle	A	3	4	Jade	0	3	
69:23	Bangle	B	3	4	Jade	0	1	
143:3	Bangle	C	4	3	Jade	0	1	
226:5_1	Bangle	C	6		Jade	0	1	
226:5_2	Bangle	C	6		Jade	0	1	
265:29	Bangle	A	6	2	Jade	0	3	
4:3	Bead	Tube	1	4	Jade	2	0	
9:6_1	Bead	Tube	1		Jade	0	0	
19:2_1	Bead	Button	1		Agate	0	0	
19:2_2	Bead	Button	1		Agate	0	0	
32:3_1	Bead	Tube	2	4	Jade	2	0	
32:3_2	Bead	Tube	2	4	Jade	2	0	
32:3_3	Bead	Tube	2	4	Jade	2	0	
32:3_4	Bead	Tube	2	4	Jade	2	0	
32:3_5	Bead	ShortTube	2	4	Jade	2	0	
32:3_6	Bead	ShortTube	2	4	Jade	2	0	
32:3_7	Bead	Round	2	4	Agate	1	0	
41:7_1	Bead	Tube	3	4	Jade	2	0	
41:7_10	Bead	Round	3	4	Agate	2	0	
41:7_11	Bead	Plug	3	4	Agate	3	0	
41:7_2	Bead	Tube	3	4	Jade	2	0	
41:7_3	Bead	ShortTube	3	4	Carnelian	2	0	
41:7_4	Bead	ShortTube	3	4	Carnelian	2	0	
41:7_5	Bead	Round	3	4	Carnelian	1	0	
41:7_6	Bead	Round	3	4	Carnelian	1	0	
41:7_7	Bead	Sequin	3	4	Turquoise		0	
41:7_8	Bead	ShortTube	3	4	GreenJade	2	0	
41:7_9	Bead	Tube	3	4	Agate	2	0	
55:2_1	Bead	Tube	3		Jade	2	0	
55:2_2	Bead	Tube	3		Jade	2	0	
55:2_3	Bead	Tube	3		Jade	2	0	
55:2_4	Bead	Round	3		Agate	1	0	
55:2_5	Bead	Round	3		Agate	1	0	
55:2_6	Bead	Round	3		Carnelian	1	0	
55:2_7	Bead	Barrel	3		Turquoise		0	
55:2_8	Bead	Tube	3		Jade	1	0	
71:4	Bead	ShortTube	3		Jade	2	0	
73	Bead	Button	3		Agate	0	0	
73:1_1	Bead	Tube	3		Jade	2	0	
73:1_2	Bead	Tube	3		Jade	0	0	
73:1_3	Bead	Tube	3		Jade	0	0	
73:1_4	Bead	Tube	3		Jade	2	0	
73:1_5	Bead	Tube	3		Jade	2	0	
144:1	Bead	Tube	4		Jade	2	0	
194:2_1	Bead	ShortTube	5		Jade	2	0	
194:2_2	Bead	Bead	5		Jade	2	0	
226:3_1	Bead	Tube	6		Jade	2	0	
226:3_2	Bead	Tube	6		Jade	2	0	
4:5_1	Eardisks		1	4	Jade	0	0	1
4:5_2	Eardisk		1	4	Jade	0	0	1
4:5_3	Eardisk		1	4	Jade	0	0	1

Appendix 21: Batatai Jade Ornament Coding

Vessel#	Type	Report Type	Season of Ex	Phase	Type of mate	Beadshape	bangleshape	eardisc_profi
4:5_4	Eardisk		1	4	Jade	0	0	1
4:5_5	Eardisk		1	4	Jade	0	0	1
4:5_6	Eardisk		1	4	Jade	0	0	1
4:5_7	Eardisk		1	4	Jade	0	0	1
4:5_8	Eardisk		1	4	Jade	0	0	1
4:5_9	Eardisk		1	4	Jade	0	0	1
32_1a	Eardisk	C	2	4	Jade	0	0	1
32_1b	Eardisk	C	1	4	Jade	0	0	1
58:1	Eardisk	B	3		Jade	0	0	1
61	Eardisk	C	3		Jade	0	0	1
121:2	Eardisk	B	4		Jade	0	0	2
143:4_1	Eardisk	B	4	3	Jade	0	0	1
143:4_2	Eardisk	B	4	3	Jade	0	0	1
154:3	Eardisk		4		Jade	0	0	2
165:8_1	Eardisk	A	4	3	Jade			1
165:8_2	Eardisk	B	4	3	Jade			1
166	Eardisk	B	4	3	Jade	0	0	1
178	Eardisk	C	4	3	Jade	0	0	2
183:13	Eardisk		5	3	Jade	0	0	1
226:2_1	Eardisk	B	6		Jade	0	0	1
226:2_2	Eardisk	C	6		Jade	0	0	0
226:2_4	Eardisk	D	6		Jade	0	0	0
265:31	Eardisk	A	6	2	Jade	0	0	1
276:1	Eardisk	C	6		Jade	0	0	0
288:1	Eardisk	B	6		Jade	0	0	1
288:2	Eardisk	D	6		Jade	0	0	0
301:1	Eardisk	D	6		Jade	0	0	2
304:31	Eardisk	A	6		Jade	0	0	1

Appendix 21: Batatai Jade Ornament Coding

Vessel#	Thickness of	Diameter of bangle	Length of be	Comment	
11:1		9.17	0		
41:6		12.92	0		
69:23		13.3	0		
143:3		14.72	0		
226:5_1		12.36	0		
226:5_2		13.19	0		
265:29		9.17	0		
4:3	0.78	0	10.15		
9:6_1	0.75	0	4.15		
19:2_1	1	0	3.5		
19:2_2	1.3	0	2		
32:3_1	0.8	0	5.8	8tube,4round	
32:3_2	0.68	0	5.7		
32:3_3	0.67	0	4.4		
32:3_4	0.71	0	3.7		
32:3_5	1.1	0	1.6		
32:3_6	1	0	1.2		
32:3_7		0	1.3		
41:7_1	0.78	0	6	7tube	
41:7_10	0.7	0		8total	
41:7_11	0	0	1.1	3total	
41:7_2	0.88	0	6.85		
41:7_3	1.06	0	1.3	1bead	
41:7_4	0.53	0	1.7	2beads	
41:7_5	1.45	0	0	1bead	
41:7_6	1	0	0	3beads	
41:7_7	0	0	0	26total	
41:7_8	0.7	0	1.2		
41:7_9	0.63	0	1.9	2total	
55:2_1	0.57	0	5.7	14beads	
55:2_2	0.92	0	3.4		
55:2_3	0.68	0	5		
55:2_4	1.4	0	0		
55:2_5	0.9	0	0		
55:2_6	0.7	0	0		
55:2_7	0.5	0	0		
55:2_8	0	0	0	Broken in2	
71:4	1.09	0	1.9		
73	1.1	2.35	0		
73:1_1	1.06		5.7	marble	
73:1_2	1.04	0	4.9	marble	
73:1_3	0.96	0	5.65	total of 6	
73:1_4	0.65	0	3.7		
73:1_5	0.75	0	3.4		
144:1	0.54	0	3		
194:2_1	0.71	0	2.2		
194:2_2	0.8	0	0		
226:3_1	0.56	0	2.9		
226:3_2	0.62	0	2.75		
4:5_1	0.25	8.9	0	set of 9	
4:5_2	0.23	7.1	0	pendant	
4:5_3	0.2	5.6	0	pendant	

Appendix 21: Batatai Jade Ornament Coding

Vessel#	Thickness of	Diameter of bangle	Length of be	Comment	
4:5_4	0.19	5.5	0	pendant	
4:5_5	0.17	4.4	0	pendant	
4:5_6	0.19	4.6	0	pendant	
4:5_7	0.2	3.5	0	pendant	
4:5_8	0.18	3.3	0	pendant	
4:5_9	0.17	2.5	0	pendant	
32_1a	0.18	2.6	0		
32_1b	0.27	2.2	0		
58:1	0.25	5.3	0		
61	0.17	2.1	0		
121:2	0.2	4.15	0		
143:4_1		4.3	0		
143:4_2		4.3	0		
154:3	0.12	6	0		
165:8_1	0.16	6.7			
165:8_2	0.1	2.9	0		
166	0.27	5	0		
178	0.18	3.8	0	2 disks	
183:13	0.12	6.6	0	narrowbangle	
226:2_1		5.3	0		
226:2_2		3.8	0		
226:2_4		2	0		
265:31		6.7	0		
276:1		3.7	0		
288:1	0.2	5	0		
288:2		2.3	0		
301:1	0.2	5.5	0		
304:31		6.8	0	drillhole	

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M99	T5	4	3.8	265	3	3b		0.88			0	0
M98	T3	5	4.0	285	3	3a	2.30	1.44	0.719	Inhum	0	1
M97	T5-6		3.8	265	3	3b	2.40	1.58	0.792	Inhum	0	1
M96	T7	5	0.8	260	1	1	2.60	2.29	2.860	Inhum	0	2
M95	T7	5	0.8	265	1	1	2.20	1.51	1.582	Inhum	0	1
M94	T7	4	1.4	265	4	4	2.60	1.50	0.777	Inhum	0	0
M93	T7	4	1.4	280	4	4	2.30	1.30	0.520	Inhum	0	1
M92	T5	4	3.7	280	3	3b	2.30	1.47	0.515	Inhum	0	1
M91	T7	4	1.3	270	4	4	2.50	2.13	0.553	Inhum	0	0
M90	T5	4	3.8	275	3	3b	3.00	3.00	1.200		0	1
M9	T7	1	0.3	280	1	1	2.00	1.40			0	0
M89	T5/T7	3	4.0	270	3	3a	2.50	1.25	0.563	Inhum	0	0
M88	T8	4	0.8	270	3	3		0.90			0	0
M87	T3	4	3.6	255	3	3b	2.70	1.76	2.633	Inhum	0	1
M86	T7	3	1.2	280	4	4	2.80	1.96	0.980	Inhum	0	1
M85	T7	3	1.0	272	3	3	2.40	2.28	1.368	Inhum	0	1
M84	T7	3	1.2	272	4	4	1.95	1.32	0.592	Inhum	0	1
M83	T2-3	3	3.6	280	3	3b	2.40	2.27	0.908	Inhum	0	0
M82	T6	3	3.6	294	3	3b	2.40	1.98	1.584	Inhum	0	1
M81	T7	3	3.6	270	3	3b	2.50	2.00	1.600	Inhum	0	0
M80	T5-6	4	3.6	275	3	3b	3.00	2.40	0.960		0	0
M8	T3	1		300	1	1	2.10	1.47	1.617	Inhum	0	0
M79	T5	3	3.6	280	3	3b	2.50	2.00	2.500		0	2
M78	T7-8	3	3.6	260	3	3b	3.30	3.63	4.719	Inhum	0	1
M77	T7	3	1.0	275	3	3	2.80	2.24	0.896	Inhum	0	0
M76	T7	3	1.0	270	3	3	1.50	0.72	0.418	Inhum	0	0
M75	T7	2	0.7	285	2	2	2.60	1.69	0.590	Inhum	0	0
M74	T4	3	3.1	290	3	3b	2.90	2.18	2.390	Inhum	0	1
M73	T4	3	3.0	290	3	3b	2.30	1.73	2.070	Inhum	0	0
M72	T4	3	3.0	265	3	3b	3.20	3.52	2.816	Inhum	1	1
M71	T4	3	3.0	275	3	3b	3.40	3.06	3.366		0	1
M70	T5	3	3.0	265	3	3b		2.25	0.564	Inhum	0	0
M7	T1		1.0	277	1	1	1.60	1.20		Inhum	0	0
M69	T8	3	0.5	275	2	2	2.60	1.95	0.975	Inhum	0	1
M68	T4	3		280	2	2a	2.30	1.15	0.345	Inhum	0	1
M67	T6	3		300	2	2a		1.02		Inhum	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M66	T5-6	3	2.4	277	2	2a	2.60	1.63	0.488	Inhum	0	0
M65	T7	2	0.3	280	2	2	2.60	2.60	1.560	Inhum	0	0
M64	T7	2	0.6	275	2	2	2.10	1.68	2.016	Inhum	0	0
M63	T6	3	2.5	275	2	2a	2.40	1.98	1.386	Inhum	0	1
M62	T6	3	2.5	270	2	2a	1.70	1.40	0.701	Inhum	0	0
M61	T7-8	3	0.8	270	3	3	2.50	1.94	0.872	Inhum	0	0
M60	T4-6	3	2.5	260	2	2a	2.60	1.56	0.390	Inhum	0	0
M6	T8	1		265	1	1	2.10	1.58	0.504	Inhum	0	0
M59	T6	3	2.5	295	2	2a	2.90	2.47	2.712	Inhum	0	1
M58	T6	3	2.5	265	2	2a	3.10	2.25	1.236	Inhum	0	0
M57	T5	3	2.0	280	2	2a	3.20	2.40	1.260	Inhum	0	0
M56	T8	3	1.0	270	3	3	3.20	1.29	0.968	Inhum	0	1
M55	T8	3	1.0	260	3	3	2.30	1.38	1.587	Inhum	0	0
M54	T8	3	1.0	285	3	3	2.40	1.68	1.050	Inhum	0	0
M53	T4	3	1.8	255	2	2b	2.00	1.30	1.300	Inhum	0	1
M52	T8	2	1.6	280	5	5		1.82		Inhum	0	1
M51	T7-8	3	1.2	270	4	4	2.40	1.44	0.432	Inhum	0	1
M50	T4	2	1.8	227	2	2b	3.10	2.48	1.736	Inhum	0	0
M5	T1	3	0.6	285	1	1	2.40	1.92	0.576		0	0
M49	T4	2	1.8	240	2	2b	2.50	1.63	0.325	Inhum	0	0
M48	T3	3	2.2	280	2	2a	2.30	1.38	1.159	Inhum	0	0
M47	T4/T6	2	1.8	214	2	2b	2.50	1.75	0.263	Inhum	0	0
M46	T6	3		270	2	2a	2.60	2.60	2.340	Inhum	0	0
M45	T7-8	3	0.8	270	3	3	2.10	1.58	0.393	Inhum	0	1
M44	T8	3	1.4	265	4	4	2.15	1.40	0.769	Inhum	0	1
M43	T8	2	0.8	270	3	3	2.50	1.88	1.688	Inhum	0	0
M42	T4	3	2.1	270	2	2a	2.80	1.96		Inhum	0	0
M41	T3-T6	4	2.1	275	2	2a	2.65	2.19	1.530	Secondledge	0	0
M40	T3/T5	2	1.8	283	2	2b	2.70	1.89		Inhum	0	0
M4	T1	3	0.6	285	1	1	2.60	2.08	0.624		0	0
M39	T3	2	2.0	275	2	2a	2.80	2.10	1.050	Inhum	0	0
M38	T6		2.0	270	2	2a	3.30	3.30	1.320	Inhum	0	1
M37	T1	3	2.0	283	2	2a	2.50	1.75	2.275	Inhum	0	0
M36	T6	2	1.6	280	2	2b	2.60	2.70	2.380	Inhum	0	0
M35	T5	2	2.0	280	2	2b	2.20	2.04	2.239	Inhum	0	0
M34	T3	0	3.0	265	2	2a		0.80	0.560	Inhum	0	1

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M33	T7/T8	1	0.5	265	1	1	2.50	2.50	1.250	Inhum	0	0
M32	T8	2	1.2	260	3	3	2.30	1.38	0.552	Inhum	0	1
M31	T5	2	1.5	233	1	1	3.00	2.40	0.600	Inhum	0	0
M30	T1	2	1.4	295	2	2b	1.80	0.90	0.630	Inhum	0	0
M3	T1			285	1	1	1.50	1.20		Inhum	0	0
M29	T1		1.4	290	2	2b	1.80	0.90	0.293	Inhum	0	0
M28	T1	2	1.4	290	2	2b	2.30	1.38		Inhum	0	0
M27	T5	2	1.5	280	2	2b				Inhum	0	0
M26	T5-6	2	1.5	270	2	2b	2.70	2.30	0.918	Inhum	0	0
M25	T3	2	1.2	283	2	2b	2.50	1.63	1.625	Inhum	0	1
M24	T3	2	0.5	275	1	1	2.20	1.43	0.715	Inhum	0	0
M23	T3	2	1.2	270	2	2b	2.70	2.97	2.835	Inhum	0	1
M22	T8	2	1.0	270	3	3	2.20	1.98	2.574	Inhum	0	1
M21	T5	2	1.5	265	2	2b	2.50	1.75	0.613	Inhum	0	0
M20	T5	2	0.5	240	1	1	2.80	2.24	1.120	Inhum	0	0
M2	T1			277	1	1	2.60	2.08	0.936	Inhum	0	1
M19	T1	3	1.0	283	1	1	2.30	1.61	0.403	Inhum	0	1
M188	T5	6	7.2	265	5	5	2.10	1.26	0.882	Inhum	0	0
M187	T3	6	6.9	265	5	5	2.40	1.68	2.016	Inhum	0	2
M186	T5	6	6.9	290	5	5	2.60	2.34	1.872	Inhum	0	1
M185	T5	6	7.1	270	5	5	2.00	1.30	1.690	Inhum	1	1
M184	T5	6	6.8	275	5	5		1.22	0.930	Inhum	0	0
M183	T5	6	7.0	265	5	5	2.40	2.40	1.560	Inhum	0	1
M182	T5	6	7.0	280	5	5	2.30	1.38	1.187	Inhum	0	1
M181	T5	6	7.0	270	5	5	2.10	1.47	1.470	Inhum	0	0
M180	T5	6	7.0	265	5	5	2.60	2.08	2.288	Inhum	0	1
M18	T5	2	0.8	265	1	1	2.40	1.92	0.576	Inhum	0	0
M179	T3	6	7.0	270	5	5	2.70	1.89	0.945	Inhum	0	2
M178	T5	6	6.3	285	4	4	2.60	2.08	2.912	Inhum	0	1
M177	T3	6	6.5	285	5	5	2.30	1.61	1.449	Inhum	0	0
M176	T5	6	7.0	270	5	5	2.40	1.80	1.044	Inhum	0	1
M175	T5	6	7.0	280	5	5	2.70	2.30	2.525	Inhum	0	2
M174	T3	6	6.0	285	5	5	2.90	2.32	1.508	Inhum	0	1
M173	T5	6	6.7	275	5	5	2.60	1.56	0.312	Inhum	0	1
M172	T5	5	6.0	285	4	4	1.80	0.81	0.527	Inhum	0	1
M171	T3/T5	6	6.1	285	4	4	2.50	1.88	1.125	Inhum	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M170	T5	6	6.1	265	5	5	2.30	1.73	1.724	Inhum	0	1
M17	T4	2		267	1	1	3.00	3.00	4.800	Inhum	0	0
M169	T5	6	6.7	270	5	5	2.40	1.56	0.468	Inhum	0	1
M168	T5-6	5	5.8	290	4	4	2.30	1.61	1.127	Inhum	0	1
M167	T5	6	6.5	285	5	5	2.20	1.32	0.528	Inhum	0	1
M166	T5	6	6.7	270	5	5	2.20	1.32	0.660	Inhum	0	1
M165	T5	6	6.8	270	5	5	2.30	1.84	1.660	Inhum	0	1
M164	T5	6		280	5	5	2.20			Inhum	0	1
M163	T5	6	7.0	280	5	5	1.80	0.90	0.270	Inhum	0	0
M162	T7	6	7.0	260	5	5	3.10	2.64	3.162	Inhum	1	1
M161	T7	6	6.6	270	5	5	2.80	2.24	2.016	Inhum	0	1
M160	T7	6	6.6	290	5	5	2.50	1.63	0.894	Inhum	0	1
M16	T4	2		265	1	1	2.80	2.24	2.128	Inhum	0	1
M159	T7	6	6.6	270	5	5	2.00	1.40	1.260	Inhum	0	0
M158	T3	6	6.0	265	4	4	3.10	2.79	3.348	Inhum	0	1
M157	T5	6	6.5	275	5	5	2.00	1.60	1.440	Inhum	0	0
M156	T3	6	6.0	280	5	5	2.20	1.54	1.540	Inhum	0	0
M155	T3/T5	6	6.0	275	5	5	2.20	1.76	1.190	Inhum	0	0
M154	T5	5	5.8	285	4	4	2.80	2.38	3.094	2 ledge	0	3
M153	T7-8	5	5.0	275	4	4	2.10	1.37	0.956	Inhum	0	0
M152	T5	6	5.8	275	4	4	2.50	2.50	2.750	2 ledge	0	1
M151	T5	5	5.8	265	4	4	1.70	1.28	0.383	Inhum	1	1
M150	T5	5	5.6	260	5	5	2.40	1.88	1.875	Inhum	0	1
M15	T3	2		275	1	1	2.00	1.40	1.120	Inhum	0	0
M149	T5	5	5.8	260	4	4	2.40	1.68	3.360	Inhum	0	1
M148	T5	5	5.8	275	4	4	2.60	1.95	2.340	Inhum	0	1
M147	T5	6	4.5	265	3	3a	2.50	2.00	0.900	Inhum	0	0
M146	T5	5	5.4	280	4	4	2.70	2.43	2.187	Inhum	0	0
M145	T5	5	5.8	270	4	4	2.50	2.50	1.125	Inhum	0	2
M144	T5	5	5.8	270	4	4	2.50	2.38	1.069	Inhum	0	1
M143	T7	5	5.6	285	4	4	2.40	1.44	1.152	Inhum	0	0
M142	T5-6	5	5.4	285	4	4	2.40	1.32	1.122	Inhum	0	1
M141	T3	6	5.6	290	5	5	2.90	2.76	3.444		0	1
M140	T5	5	5.2	295	4	4	2.10	1.80	3.060	Inhum	0	1
M14	T4	2		270	1	1	2.50	2.50	3.750	Inhum	0	0
M139	T6	5	4.5	295	3	3a	2.40	1.44	2.016	Inhum	0	1

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M138	T5	5	5.0	285	3	3a	2.40	1.20	0.360	Inhum	0	0
M137	T7	5	4.0	275	3	3a	2.60	1.56	0.312	Inhum	0	0
M136	T8	5	4.0	260	3	3a	2.20	1.54	1.540	Inhum	0	0
M135	T3	6	5.5	270	4	4	2.10	1.26	0.882	Inhum	0	1
M134	T4	6	5.8	280	4	4	2.90	2.61	4.698	Inhum	1	2
M133	T3	5	5.5	275	4	4	2.50	2.25	3.600	Inhum	1	2
M132	T4	6	5.6	270	4	4	2.90	2.61	2.610	Inhum	1	2
M131	T7-8	6	1.6	285	5	5	2.70	1.89	1.436	Inhum	0	1
M130	T8	6	1.5	265	5	5	1.50	0.90	0.360	Inhum	0	1
M13	T4	1		235	1	1	2.50	1.30	0.260	Inhum	0	0
M129	T7-8	6	1.6	270	5	5	2.70	2.57		Inhum	0	0
M128	T7	6	1.8	275	5	5	2.40	1.68	1.512	Inhum	0	1
M127	T7	6	1.2	265	4	4	2.60	1.82	0.728	Inhum	0	0
M126	T5/T7	4	4.5	290	3	3a	2.60	2.08	2.288	Inhum	0	1
M125	T6	4	4.7	265	3	3a	2.60	1.69	1.014	Inhum	0	1
M124	T1-2	6	5.6	285	4	4	1.65	0.83	0.908	Inhum	0	1
M123	T3	5	4.7	285	3	3a	3.40	4.42	8.398	Tumulus	0	1
M122	T3	5	4.5	255	4	4	2.40	1.92	1.920	Inhum	0	0
M121	T5	5	4.4	280	3	3a	2.50	2.50	3.500	Inhum	0	1
M120	T7	6	1.5	265	5	5	2.40	1.92	2.496	Inhum	0	1
M12	T6	1	0.8	240	1	1				Inhum	0	0
M119	T7	5	1.6	265	5	5	2.40	1.74	0.696	Inhum	1	2
M118	T7	5	1.5	255	4	4	2.50	1.38	0.413	Inhum	0	1
M117	T7	5	1.5	270	5	5	2.20	0.99	0.693	Inhum	0	1
M116	T5	5	4.2	275	3	3a	2.60	1.95	1.755	Inhum	0	3
M115	T8	5	1.0	260	4	4	2.25	1.13	0.675	Inhum	0	2
M114	T5	3	4.0	275	3	3a	2.90	2.47	4.191	Inhum	0	2
M113	T4	5	4.2	285	3	3a	2.30	1.84	1.196	Inhum	0	1
M112	T7	6	1.2	275	4	4	2.30	1.38	1.242	Inhum	0	1
M111	T4/T6	5	4.0	275	3	3a	2.30	1.38	1.656	Tumulus	0	1
M110	T5	5	4.2	280	3	3a	2.60	1.56	0.936	Tumulus	0	1
M11	T8	1		270	1	1	2.40	1.86	1.488	Inhum	0	0
M109	T3	5	4.2	270	3	3a	2.60	2.08	3.744	Inhum	0	2
M108	T8	5	1.6	265	5	5	2.20	1.10	0.660	Inhum	0	1
M107	T7	6	1.2	275	4	4	2.30	2.07	1.240	Inhum	0	1
M106	T7	5	0.6	250	4	4	2.30	1.50	1.794	Inhum	0	1

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Unit	Level	Dpthdatm	Orient	Phase	Sequence	gravelength	Area	Volume	Tombtype	Bigtrpd	Ttlround
M105	T3-4	4	4.0	275	3	3a	2.80	2.94	3.822	Inhum	0	2
M104	T5	4	3.6	265	3	3b	2.50	1.88	3.000	Inhum	0	1
M103	T5	5	4.0	275	3	3a	2.30	2.30	1.610	Inhum	0	1
M102	T5	3	3.9	280	3	3b	2.30	1.84	1.288	Inhum	0	1
M101	T3	5	4.1	280	3	3a	2.40	2.28	2.508	Inhum	0	1
M100	T3-4	4	4.0	275	3	3a	2.15	1.40	1.537		0	1
M10	T7	1	0.3	285	1	1	2.20	1.41	0.183	Inhum	0	0
M1	T3			345	1	1	2.35	1.82	1.365	Inhum	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M99	0	1	1	0	2	2	0	1	0	0	1	1	0	0
M98	0	0	1	0	0	0	0	1	0	1	2	2	0	0
M97	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M96	0	0	2	0	1	1	0	1	0	1	1	2	1	0
M95	0	0	1	1	0	1	0	1	0	2	2	3	0	0
M94	1	1	1	0	0	0	0	0	0	0	0	0	0	0
M93	0	0	1	1	0	1	0	1	0	0	0	1	0	0
M92	0	0	1	0	1	1	0	0	0	0	0	0	0	0
M91	0	1	1	1	0	1	0	0	0	0	0	0	1	0
M90	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M89	0	0	0	0	1	1	0	0	0	0	0	0	0	1
M88	0	0	0	0	1	1	0	0	0	0	0	0	0	0
M87	0	1	2	1	0	1	0	2	0	0	0	2	0	0
M86	0	0	1	0	1	1	0	1	0	0	1	1	0	0
M85	0	0	1	0	1	1	0	0	0	0	0	0	0	0
M84	0	0	1	0	0	0	0	1	0	0	0	1	0	0
M83	0	0	0	1	0	1	0	0	0	0	0	0	0	1
M82	0	0	1	0	1	1	0	0	0	0	0	0	0	0
M81	0	0	0	0	1	1	1	0	0	1	1	1	1	0
M80	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M8	1	1	1	0	1	1	0	0	0	0	0	0	1	0
M79	0	1	3	0	1	1	0	1	0	0	0	1	0	0
M78	0	0	1	1	1	2	0	1	0	1	1	2	0	0
M77	0	1	1	0	1	1	0	1	0	0	0	1	0	0
M76	0	0	0	1	0	1	0	2	0	0	0	2	0	0
M75	0	1	1	0	1	1	0	1	0	0	0	1	0	0
M74	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M73	0	1	1	0	1	1	0	1	0	1	1	2	0	0
M72	0	1	2	0	1	1	0	1	0	0	0	1	0	0
M71	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M70	1	1	1	1	0	1	0	0	0	0	0	0	0	1
M7	0	0	0	1	0	1	0	0	0	0	0	0	0	0
M69	0	0	1	1	1	2	0	1	0	2	2	3	0	0
M68	0	0	1	0	0	0	1	0	0	1	1	1	1	0
M67	0	0	0	0	1	1	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M66	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M65	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M64	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M63	0	1	2	1	0	1	0	1	0	0	0	1	0	0
M62	0	1	1	0	0	0	0	0	0	0	0	0	0	0
M61	0	1	1	0	0	0	0	0	0	1	1	1	1	0
M60	0	0	0	0	0	0	0	0	0	1	1	1	0	0
M6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M59	0	0	1	1	1	2	0	0	3	1	1	4	0	0
M58	1	1	1	0	1	1	0	1	0	1	1	2	0	0
M57	0	1	1	0	1	1	0	1	0	2	2	3	0	1
M56	0	0	1	1	0	1	0	0	0	0	0	0	1	0
M55	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M54	0	1	1	1	0	1	0	1	0	1	1	2	0	0
M53	0	0	1	0	1	1	0	1	0	1	1	2	0	0
M52	0	0	1	0	0	0	0	1	0	0	0	1	0	0
M51	0	0	1	0	1	1	0	0	0	2	1	2	1	0
M50	0	0	0	0	0	0	1	0	0	0	0	0	0	1
M5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M49	0	0	0	0	0	0	1	0	0	0	0	0	0	1
M48	0	1	1	1	0	1	0	2	0	1	2	3	0	0
M47	0	0	0	0	0	0	0	0	0	0	0	0	0	1
M46	0	0	0	0	1	1	0	0	0	1	1	1	0	0
M45	0	0	1	1	0	1	1	0	0	0	0	0	0	0
M44	0	0	1	0	2	2	0	0	0	0	0	0	0	0
M43	1	1	1	0	1	1	0	0	0	0	0	0	1	0
M42	0	0	0	0	0	0	0	0	0	1	1	1	0	0
M41	1	1	1	0	1	1	0	0	0	0	0	0	0	0
M40	1	1	1	1	0	1	0	1	0	1	1	2	0	0
M4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M39	0	1	1	0	1	1	0	0	0	1	1	1	0	1
M38	0	0	1	0	0	0	1	0	0	0	0	0	0	0
M37	0	1	1	1	0	1	0	2	0	0	0	2	0	0
M36	0	0	0	0	0	0	0	0	0	1	1	1	0	1
M35	0	0	0	0	0	0	0	0	0	1	1	1	0	0
M34	0	0	1	1	0	1	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M33	0	0	0	0	0	0	0	0	0	1	1	1	0	0
M32	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M31	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M3	0	0	0	1	0	1	0	0	0	0	0	0	0	0
M29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M28	0	0	0	0	0	0	0	1	0	1	1	2	0	0
M27	0	1	1	1	0	1	0	0	0	0	0	0	0	0
M26	0	0	0	0	0	0	1	0	0	0	0	0	0	1
M25	0	0	1	1	1	2	0	0	0	0	0	0	0	0
M24	0	0	0	1	0	1	0	1	0	0	0	1	0	0
M23	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M22	0	0	1	0	1	1	0	1	0	1	1	2	0	0
M21	0	1	1	0	1	1	0	0	0	0	0	0	0	1
M20	0	0	0	0	0	0	1	0	0	0	0	0	0	1
M2	0	0	1	0	1	1	0	0	0	0	0	0	0	0
M19	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M188	0	0	1	2	0	2	0	0	0	0	0	0	0	0
M187	0	0	2	0	0	0	0	1	0	0	1	1	0	0
M186	0	0	1	1	0	1	0	1	0	0	1	1	0	0
M185	0	0	2	0	0	0	0	3	0	1	2	4	0	0
M184	0	0	0	0	0	0	0	0	1	0	1	1	0	0
M183	0	0	1	1	0	1	0	0	1	1	2	2	0	0
M182	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M181	0	0	1	0	0	0	0	2	0	0	1	2	0	0
M180	0	0	1	1	0	1	0	1	0	0	1	1	0	0
M18	0	0	0	0	0	0	2	0	0	0	0	0	0	0
M179	0	0	2	0	0	0	0	2	0	0	1	2	0	0
M178	0	0	1	1	0	1	0	1	0	0	1	1	0	0
M177	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M176	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M175	0	0	2	0	0	0	0	2	1	1	3	4	0	0
M174	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M173	0	0	1	0	0	0	0	0	0	1	1	1	1	0
M172	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M171	0	0	0	1	0	1	0	1	0	1	2	2	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M170	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M17	0	0	0	2	0	2	2	0	0	1	1	1	0	1
M169	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M168	0	0	1	0	1	1	0	1	0	0	1	1	0	0
M167	0	0	1	0	0	0	0	0	0	1	1	1	1	0
M166	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M165	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M164	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M163	0	0	0	1	0	1	0	1	0	0	1	1	0	0
M162	0	0	1	1	0	1	0	1	1	0	2	2	0	0
M161	0	0	1	0	0	0	0	1	0	1	2	2	0	0
M160	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M16	1	1	2	0	0	0	1	1	0	0	0	1	0	0
M159	0	0	0	1	0	1	0	0	0	0	0	0	0	0
M158	0	0	1	1	0	1	0	2	0	0	1	2	0	0
M157	0	0	0	1	0	1	0	0	0	0	0	0	0	0
M156	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M155	0	0	0	0	0	0	0	1	0	0	1	1	0	0
M154	0	0	3	1	0	1	0	4	0	1	2	5	0	0
M153	0	1	1	1	0	1	0	2	0	0	1	2	0	0
M152	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M151	0	0	1	0	1	1	0	1	0	0	1	1	0	0
M150	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M15	0	1	1	0	0	0	0	0	0	0	0	0	0	0
M149	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M148	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M147	0	0	1	1	0	1	0	0	0	1	1	1	0	0
M146	0	1	1	1	0	1	0	0	0	0	0	0	0	0
M145	0	0	2	1	0	1	0	1	0	0	1	1	0	0
M144	0	0	1	0	0	0	0	1	0	1	2	2	0	0
M143	0	1	1	0	0	0	0	0	1	0	1	1	0	0
M142	0	0	1	1	0	1	0	0	0	1	1	1	0	0
M141	0	0	1	1	0	1	0	2	1	0	2	3	0	0
M140	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M14	0	1	1	0	1	1	0	1	0	1	1	2	0	0
M139	0	0	1	1	0	1	0	0	1	0	1	1	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M138	0	1	1	0	0	0	0	2	0	1	2	3	0	0
M137	0	1	1	1	0	1	0	1	0	0	1	1	0	0
M136	0	1	1	1	0	1	0	0	0	0	0	0	0	0
M135	0	0	1	0	0	0	0	1	1	1	3	3	0	1
M134	0	0	2	0	0	0	0	3	1	0	2	4	1	1
M133	0	0	2	1	0	1	0	2	2	0	2	4	0	0
M132	0	0	2	0	0	0	0	0	0	0	0	0	0	0
M131	0	0	1	1	0	1	0	2	0	0	1	2	0	0
M130	0	0	1	0	0	0	0	0	1	1	2	2	0	0
M13	0	0	0	0	1	1	2	0	0	0	0	0	0	0
M129	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M128	0	0	1	0	0	0	0	1	0	1	2	2	0	0
M127	0	1	1	1	0	1	0	2	0	0	1	2	0	0
M126	0	0	1	1	0	1	0	0	1	0	1	1	0	0
M125	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M124	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M123	0	0	1	1	0	1	0	3	0	1	2	4	0	0
M122	0	1	1	1	0	1	0	1	0	1	2	2	0	0
M121	0	0	1	0	0	0	0	0	0	0	0	0	1	0
M120	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M12	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M119	0	0	2	1	0	1	0	1	0	1	2	2	0	0
M118	0	0	1	0	0	0	0	0	0	0	0	0	1	0
M117	0	0	1	0	0	0	0	1	0	0	1	1	0	0
M116	0	0	3	0	1	1	0	0	0	0	0	0	0	0
M115	0	1	3	1	0	1	0	1	0	1	2	2	0	0
M114	0	1	3	0	1	1	0	2	0	0	1	2	0	0
M113	0	0	1	0	1	1	0	1	0	0	1	1	0	0
M112	0	0	1	0	0	0	0	1	0	1	2	2	0	0
M111	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M110	0	0	1	0	1	1	0	0	1	1	2	2	0	0
M11	0	1	1	0	0	0	1	0	0	0	0	0	0	0
M109	0	0	2	2	0	2	0	1	0	1	2	2	0	0
M108	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M107	0	0	1	0	0	0	0	0	0	0	0	0	0	0
M106	0	0	1	2	0	2	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	BTrpd	Ttlbase	TtlTrpd	TtlAjar	Abjar	Ttljar	Bjar	TtlALbk	TtlBLbk	TtlCLbk	Lbkset	TtlLbk	Globjar	Hujar
M105	0	0	2	1	0	1	0	1	0	0	1	1	0	0
M104	0	0	1	1	0	1	0	1	0	1	2	2	0	0
M103	0	0	1	1	1	2	0	1	0	1	2	2	0	0
M102	0	0	1	0	1	1	0	1	0	1	2	2	0	0
M101	0	0	1	1	0	1	0	1	0	0	1	1	0	0
M100	0	0	1	1	0	1	0	0	0	0	0	0	0	0
M10	0	0	0	0	0	0	1	1	0	1	1	2	0	0
M1	0	0	1	1	0	1	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M99	0	0	0	4	TJL	3	0	0	0	0	0	0
M98	0	0	0	3	JL	2	0	0	0	0	0	0
M97	0	0	1	3	TJP	3	0	0	0	0	0	0
M96	0	0	2	8	TJLGP	5	0	0	0	0	0	0
M95	0	0	1	6	TJLP	4	0	1	0	0	0	1
M94	0	0	0	1	TJ	2	0	0	0	0	0	0
M93	0	0	0	3	TJL	3	0	0	0	0	0	0
M92	0	0	0	2	TJ	2	0	0	0	0	0	0
M91	0	0	1	4	TJGP	4	0	0	0	0	0	0
M90	0	1	1	3	TZP	3	0	0	0	0	0	0
M9	0	0	0	0		0	0	0	0	0	0	0
M89	0	1	0	3	JZH	3	0	0	0	0	0	0
M88	0	0	1	2	JP	2	0	1	0	0	0	1
M87	0	0	1	6	TJLP	4	0	0	0	0	0	0
M86	0	0	0	3	TJL	3	0	0	0	0	0	0
M85	0	0	0	2	TJ	2	0	0	0	0	0	0
M84	0	0	0	2	TJ	2	0	0	0	0	0	0
M83	0	0	0	2	JH	2	0	0	0	0	0	0
M82	0	0	0	2	TJ	2	0	0	0	0	0	0
M81	0	0	1	4	JLGP	4	0	0	0	0	0	0
M80	0	0	2	3	JP	2	0	0	0	0	0	0
M8	0	0	1	4	TJP	3	0	0	0	0	0	0
M79	0	0	1	6	TJLP	4	0	0	0	0	0	0
M78	0	0	1	6	TJLP	4	0	0	0	0	0	0
M77	0	0	0	3	TJL	3	0	0	0	0	0	0
M76	0	0	1	4	JP	2	0	0	0	0	0	0
M75	0	0	0	3	TJL	3	0	0	0	0	0	0
M74	0	0	0	2	TJ	2	0	0	0	0	0	0
M73	0	0	1	5	TJLP	4	0	0	0	0	0	0
M72	0	0	0	4	TJL	3	0	0	0	0	0	0
M71	0	0	2	3	TP	2	0	0	0	0	0	0
M70	0	0	0	3	TJH	3	0	0	0	0	0	0
M7	0	0	1	2	JP	2	0	0	0	0	0	0
M69	0	0	0	6	TJL	3	0	0	0	0	0	0
M68	0	0	0	3	TJLG	4	0	0	0	0	0	0
M67	0	0	1	2	JP	2	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M66	0	0	1	2	LP	2	0	0	0	1	0	1
M65	0	0	1	2	LP	2	0	0	0	0	0	0
M64	0	0	1	1	P	1	0	0	0	0	0	0
M63	0	0	1	5	TJLP	4	0	0	0	0	0	0
M62	0	0	1	2	TP	2	0	0	0	0	0	0
M61	0	0	1	4	TLGP	4	0	0	0	0	0	0
M60	0	0	1	2	LP	2	0	0	0	0	0	0
M6	0	0	1	1	P	1	0	0	0	0	0	0
M59	0	0	1	8	TJLP	4	0	0	0	0	0	0
M58	0	0	0	4	TJL	3	0	0	0	0	0	0
M57	0	1	2	9	TJLZHP	6	0	0	0	0	0	0
M56	0	0	0	3	TJG	3	0	0	0	0	0	0
M55	0	0	0	1	J	1	0	0	0	0	0	0
M54	0	0	0	4	TJL	3	0	0	0	0	0	0
M53	0	0	0	4	TJL	3	0	0	0	0	0	0
M52	0	0	2	4	TLP	3	0	0	0	0	0	0
M51	0	0	1	6	TJLGP	5	0	0	0	0	0	0
M50	0	1	0	2	JZHP	4	0	0	0	0	0	0
M5	0	0	0	0		0	0	0	0	0	0	0
M49	0	1	1	3	JDZHP	5	0	0	0	0	0	0
M48	0	0	1	6	TJLP	4	0	1	0	0	0	1
M47	0	0	1	2	HP	2	0	0	0	0	0	0
M46	0	0	0	2	JL	2	0	0	0	0	0	0
M45	0	0	0	2	TJL	3	0	0	0	0	0	0
M44	0	0	1	4	TJP	3	0	0	0	0	0	0
M43	0	0	0	3	TJG	3	0	0	0	0	0	0
M42	0	0	1	2	LP	2	0	0	1	0	0	1
M41	0	0	0	2	T	1	0	0	0	0	0	0
M40	0	0	1	5	TJ	2	1	0	0	0	0	1
M4	0	0	0	0		0	0	0	0	0	0	0
M39	0	0	0	4	TJLH	4	0	0	0	0	0	0
M38	0	0	0	1	TJ	2	0	0	0	0	0	0
M37	0	1	0	5	TJLZ	4	0	0	0	0	0	0
M36	0	0	1	3	LHP	3	0	0	0	0	0	0
M35	0	0	0	1	L	1	0	0	0	0	0	0
M34	0	0	1	3	TJP	3	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M33	0	0	1	2	LP	2	0	0	0	0	0	0
M32	0	0	2	4	TP	2	0	0	0	0	0	0
M31	0	0	0	0		0	0	0	0	0	0	0
M30	0	0	1	1	P	1	0	0	0	0	0	0
M3	0	0	0	1	J	1	0	0	0	0	0	0
M29	0	0	1	1	P	1	0	0	0	0	0	0
M28	0	0	0	2	L	1	0	0	0	0	0	0
M27	0	0	0	2	J	1	0	0	0	0	0	0
M26	1	0	0	2	HP	2	0	0	0	0	0	0
M25	0	0	0	3	TJ	2	0	0	0	0	0	0
M24	0	0	0	2	JL	2	0	0	0	0	0	0
M23	0	0	1	3	TJP	3	0	0	0	0	0	0
M22	0	0	1	5	TJLP	4	0	0	0	0	0	0
M21	0	0	1	4	TJHP	4	0	0	0	0	1	1
M20	1	1	1	4	HPZP	4	0	0	0	0	0	0
M2	0	0	1	3	TJP	3	0	1	0	0	0	1
M19	0	0	0	2	TJ	2	0	0	0	0	0	0
M188	0	0	0	3	TJ	2	0	0	0	0	0	0
M187	0	0	1	4	TLP	3	0	0	0	0	0	0
M186	0	0	0	3	TJL	3	0	0	0	0	0	0
M185	0	0	0	6	TL	2	0	0	0	0	0	0
M184	0	0	0	1	L	1	0	0	0	0	0	0
M183	0	0	0	4	TJL	3	0	0	0	0	0	0
M182	0	0	0	2	TL	2	0	0	0	0	0	0
M181	0	0	1	4	TLP	3	0	0	0	0	0	0
M180	0	0	1	4	TJLP	4	0	0	0	0	0	0
M18	0	1	0	1	Z	1	0	0	0	0	0	0
M179	0	0	1	5	TLP	3	0	0	0	0	0	0
M178	0	0	1	4	TJLP	4	0	0	0	0	0	0
M177	0	0	1	3	TLP	3	0	0	0	0	0	0
M176	0	0	1	3	TJP	3	0	0	0	0	0	0
M175	0	0	1	7	TJLP	4	0	0	0	0	0	0
M174	0	0	0	2	TJ	2	0	0	0	0	0	0
M173	0	0	0	3	TJL	3	0	0	0	0	0	0
M172	0	0	0	4	TJL	3	0	0	0	0	0	0
M171	0	0	0	3	TL	2	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M170	0	0	1	5	TJLP	4	0	0	0	0	0	0
M17	0	1	1	6	JLZHP	5	0	0	0	0	0	0
M169	0	0	0	2	TJ	2	0	0	0	0	0	0
M168	0	0	1	4	TJLP	4	0	0	0	0	0	0
M167	0	0	0	3	TLG	3	0	0	0	0	0	0
M166	0	0	0	2	TL	2	0	0	0	0	0	0
M165	0	0	0	1	T	1	0	0	0	0	0	0
M164	0	0	0	4	TJL	3	0	0	0	0	0	0
M163	0	1	1	4	JLZP	4	0	0	0	0	0	0
M162	0	0	0	4	TJL	3	0	0	0	0	0	0
M161	0	0	1	4	TLP	3	0	0	0	0	0	0
M160	0	0	0	4	TJL	3	0	0	0	0	0	0
M16	0	0	0	3	TJL	3	0	0	0	0	0	0
M159	0	0	0	1	J	1	0	0	0	0	0	0
M158	0	0	1	5	TJLP	4	0	0	0	0	0	0
M157	0	0	0	1	J	1	0	0	0	0	0	0
M156	0	0	1	3	TLP	3	0	0	0	0	0	0
M155	0	0	0	1	J	1	0	0	0	0	0	0
M154	0	0	0	9	TJL	3	0	0	0	0	0	0
M153	0	0	0	4	TJL	3	0	0	0	0	0	0
M152	0	0	1	5	TJLP	4	0	0	1	0	0	1
M151	0	0	0	3	TJL	3	0	0	0	0	0	0
M150	0	0	0	2	TJ	2	0	0	0	0	0	0
M15	0	0	0	1	T	1	0	0	0	0	0	0
M149	0	0	0	1	T	1	0	0	0	0	0	0
M148	0	0	0	2	TJ	2	0	0	0	0	0	0
M147	0	0	0	3	TJL	3	0	0	0	0	0	0
M146	0	0	0	2	TJ	2	1	0	0	0	0	1
M145	0	0	1	5	TJLP	4	0	0	0	0	0	0
M144	0	0	0	3	TL	2	0	0	0	0	0	0
M143	0	0	2	4	TLP	3	0	0	0	0	0	0
M142	0	0	0	3	TJL	3	0	0	0	0	0	0
M141	0	0	0	5	TJL	3	0	0	0	0	0	0
M140	0	0	1	3	TLP	3	0	0	1	0	0	1
M14	0	0	0	4	TJLP	4	0	0	0	0	0	0
M139	0	0	1	4	TJLP	4	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M138	0	0	1	5	TLP	3	0	0	0	0	0	0
M137	0	0	1	4	TJLP	4	0	1	0	0	0	1
M136	0	0	0	2	TJ	2	0	0	0	0	0	0
M135	0	0	0	5	TLH	3	0	0	0	0	0	0
M134	0	0	1	9	TLGHP	5	0	0	0	0	0	0
M133	0	0	0	7	TJL	3	0	0	0	0	0	0
M132	0	0	1	3	TJP	3	0	0	0	0	0	0
M131	0	0	2	6	TJLP	4	0	0	0	0	0	0
M130	0	0	1	4	TLP	3	0	0	0	0	0	0
M13	1	0	1	3	JPP	3	0	0	0	0	0	0
M129	0	0	0	3	JL	2	0	0	0	0	0	0
M128	0	0	0	3	TL	2	0	0	0	0	0	0
M127	0	0	2	6	TJLP	4	0	0	0	0	0	0
M126	0	0	1	4	TJLP	4	0	0	0	0	1	1
M125	0	0	1	3	TJP	3	0	0	0	0	0	0
M124	0	0	0	1	T	1	0	0	0	0	0	0
M123	0	0	1	7	TJLP	4	0	0	0	0	0	0
M122	0	0	0	4	TJL	3	0	0	0	0	0	0
M121	0	0	0	2	TG	2	0	0	0	0	0	0
M120	0	0	0	1	T	1	0	0	0	0	0	0
M12	0	0	0	0		0	0	0	0	0	0	0
M119	0	0	0	5	TJL	3	0	0	0	0	0	0
M118	0	0	0	2	TG	2	0	0	0	0	0	0
M117	0	0	0	2	TL	2	0	0	0	0	0	0
M116	0	0	1	5	TJP	3	0	0	0	0	0	0
M115	0	0	0	6	TJL	3	0	0	0	0	0	0
M114	0	0	1	7	TJLP	4	0	0	1	0	0	1
M113	0	0	1	4	TJLP	4	0	0	0	0	0	0
M112	0	0	0	3	TL	2	0	0	0	0	0	0
M111	0	0	1	5	TJLP	4	0	0	0	0	0	0
M110	0	0	1	5	TJLP	4	0	0	0	0	0	0
M11	0	0	0	1	J	1	0	0	0	0	0	0
M109	0	0	1	7	TJLP	4	0	0	0	0	0	0
M108	0	0	0	4	TJL	3	0	0	0	0	0	0
M107	0	0	1	2	TP	2	0	0	0	0	0	0
M106	0	0	0	3	TJ	2	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Pdstal	Zun	Plate	TtlVsl	Ttltype	notypes	Bzehalberd	BzeAswrd	BzeBswrd	Bzespear	Bzeknife	Ttlweapn
M105	0	0	1	5	TJ	2	0	0	0	0	0	0
M104	0	0	0	4	TJL	3	0	1	0	0	0	1
M103	0	0	1	6	TJLP	4	0	0	0	0	0	0
M102	0	0	0	4	TJL	3	0	0	0	0	0	0
M101	0	0	2	5	TJLP	4	0	0	0	0	0	0
M100	0	0	0	2	TJ	2	0	0	0	0	0	0
M10	0	0	1	3	LP	2	0	0	0	0	0	0
M1	0	0	1	3	TJP	3	1	0	0	0	0	1

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M99	0	0	0	0	0	0	0	0	0	0
M98	0	0	0	0	0	0	0	0	0	0
M97	0	0	0	0	0	0	0	0	0	0
M96	0	0	0	0	0	0	0	0	0	0
M95	0	0	0	0	0	1	0	0	0	0
M94	0	0	0	0	0	0	0	1	0	0
M93	0	0	0	0	0	0	0	0	0	0
M92	0	0	0	0	0	0	0	0	0	0
M91	0	0	0	0	0	0	0	0	0	0
M90	0	0	0	0	0	0	0	0	0	0
M9	0	0	0	0	0	0	0	0	0	0
M89	0	0	0	0	0	0	0	0	0	0
M88	0	0	0	0	0	1	0	0	0	0
M87	0	0	0	0	0	0	0	0	0	0
M86	0	0	0	0	1	1	0	0	0	0
M85	0	0	0	0	0	0	0	0	0	0
M84	0	0	0	0	0	0	0	0	0	0
M83	0	0	0	0	0	0	0	0	0	0
M82	0	0	0	0	0	0	0	0	0	0
M81	0	0	0	0	0	0	0	0	0	0
M80	0	0	0	0	1	1	0	1	0	2
M8	0	0	0	0	0	0	0	0	0	0
M79	0	0	0	0	0	0	0	0	0	1
M78	0	0	0	0	0	0	0	0	0	0
M77	0	0	0	0	0	0	0	0	0	0
M76	0	0	0	0	0	0	0	1	0	0
M75	0	0	0	0	0	0	0	0	0	0
M74	0	0	0	0	0	0	0	0	0	0
M73	0	0	0	0	0	0	0	0	0	0
M72	0	0	0	0	0	0	0	0	0	0
M71	0	0	0	0	0	0	0	0	0	0
M70	0	0	0	0	0	0	0	0	0	0
M7	0	0	0	0	0	0	0	0	0	0
M69	0	0	0	0	0	0	0	0	0	0
M68	0	0	0	0	0	0	0	0	0	0
M67	0	0	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M66	0	0	0	0	0	1	0	0	1	0
M65	0	0	0	0	0	0	0	0	0	0
M64	0	0	0	0	0	0	0	0	0	0
M63	0	0	0	0	1	1	0	0	0	0
M62	0	0	0	0	0	0	0	0	0	0
M61	0	0	0	0	0	0	0	0	0	0
M60	0	0	0	0	0	0	0	0	0	0
M6	0	0	0	0	0	0	0	0	0	0
M59	0	0	0	0	0	0	0	0	0	0
M58	0	0	0	0	0	0	0	0	0	0
M57	0	0	0	0	0	0	0	0	0	0
M56	0	0	0	0	0	0	0	0	0	0
M55	0	0	0	0	0	0	0	0	0	0
M54	0	0	0	0	0	0	0	0	0	0
M53	0	0	0	0	0	0	0	0	0	0
M52	0	0	0	0	0	0	0	0	0	0
M51	0	0	0	0	0	0	0	0	0	0
M50	0	0	0	0	0	0	0	0	0	0
M5	0	0	0	0	0	0	0	0	0	0
M49	0	0	0	0	0	0	0	0	0	0
M48	0	0	0	0	0	1	0	0	1	0
M47	0	0	0	0	0	0	0	0	1	0
M46	0	0	0	0	0	0	0	0	0	0
M45	0	0	0	0	0	0	0	0	0	0
M44	0	0	0	0	0	0	0	0	0	0
M43	0	0	0	0	0	0	0	0	0	0
M42	0	0	0	0	0	1	0	0	0	0
M41	0	0	0	0	0	0	0	0	0	0
M40	1	0	0	1	2	4	1	0	0	0
M4	0	0	0	0	0	0	0	0	0	0
M39	0	0	0	0	0	0	0	0	0	0
M38	0	0	0	0	1	1	0	0	0	0
M37	0	0	0	0	0	0	0	0	0	0
M36	0	0	0	0	0	0	0	0	0	0
M35	0	0	0	0	0	0	0	0	0	0
M34	0	0	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M33	0	0	0	0	0	0	0	0	0	0
M32	0	0	0	0	0	0	0	0	0	0
M31	0	0	0	0	0	0	0	0	0	0
M30	0	0	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	0	0	0	0
M29	0	0	0	0	0	0	0	0	0	0
M28	0	0	0	0	0	0	0	0	0	0
M27	0	0	0	0	0	0	0	0	0	0
M26	0	0	0	0	0	0	0	0	0	0
M25	0	0	0	0	0	0	0	0	0	0
M24	0	0	0	0	0	0	0	0	0	0
M23	0	0	0	0	0	0	0	0	0	0
M22	0	0	0	0	0	0	0	0	0	0
M21	0	0	0	0	0	1	0	0	0	0
M20	0	0	0	0	0	0	0	0	0	0
M2	0	0	0	0	0	1	0	0	0	0
M19	0	0	0	0	0	0	0	0	0	0
M188	0	0	0	0	0	0	0	0	0	1
M187	0	0	0	0	0	0	0	0	0	0
M186	0	0	0	0	0	0	0	0	0	0
M185	0	0	0	0	0	0	0	0	0	0
M184	0	0	0	0	0	0	0	0	0	0
M183	0	2	0	2	0	2	0	1	2	1
M182	0	0	0	0	0	0	0	0	0	0
M181	0	0	1	1	0	1	0	0	0	0
M180	0	0	0	0	0	0	0	0	0	0
M18	0	0	0	0	0	0	0	0	0	0
M179	0	0	1	1	0	1	0	0	0	1
M178	0	0	0	0	0	0	0	0	0	1
M177	0	0	0	0	0	0	0	0	0	1
M176	0	0	0	0	0	0	0	0	0	0
M175	0	0	0	0	0	0	0	0	0	0
M174	0	0	0	0	0	0	0	0	0	0
M173	0	0	0	0	0	0	0	0	0	0
M172	0	0	0	0	0	0	0	0	0	0
M171	0	0	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M170	0	0	0	0	0	0	0	0	0	0
M17	0	0	0	0	0	0	0	0	0	0
M169	0	0	0	0	0	0	0	0	0	0
M168	0	0	0	0	0	0	0	0	0	0
M167	0	0	0	0	0	0	0	0	0	0
M166	0	0	0	0	0	0	0	0	0	0
M165	0	0	0	0	0	0	0	0	0	0
M164	0	0	0	0	0	0	0	0	0	0
M163	0	1	0	1	0	1	0	1	0	1
M162	0	0	0	0	0	0	0	0	0	0
M161	0	0	0	0	0	0	0	0	0	0
M160	0	0	0	0	0	0	0	0	0	0
M16	0	0	0	0	0	0	0	0	0	0
M159	0	0	0	0	0	0	0	0	0	0
M158	0	0	0	0	0	0	0	1	0	1
M157	0	0	0	0	0	0	0	0	0	0
M156	0	0	0	0	0	0	0	0	0	0
M155	0	0	0	0	0	0	0	0	0	0
M154	0	0	0	0	0	0	0	0	0	0
M153	0	0	0	0	0	0	0	0	0	0
M152	0	0	0	0	0	1	0	0	1	0
M151	0	0	0	0	0	0	0	0	0	0
M150	0	0	0	0	0	0	0	0	0	0
M15	0	0	0	0	0	0	0	0	0	0
M149	0	0	0	0	0	0	0	0	0	0
M148	0	0	0	0	0	0	0	0	0	0
M147	0	0	0	0	0	0	0	0	0	0
M146	0	0	0	0	0	1	0	0	0	0
M145	0	0	0	0	0	0	0	1	0	0
M144	0	0	0	0	0	0	0	0	0	0
M143	0	0	0	0	0	0	0	0	0	0
M142	0	0	0	0	0	0	0	0	0	0
M141	0	0	0	0	0	0	0	0	0	1
M140	0	0	0	0	0	1	0	0	0	0
M14	0	0	0	0	0	0	0	0	0	0
M139	0	0	0	0	0	0	0	0	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M138	0	0	0	0	0	0	0	0	0	0
M137	0	0	0	0	0	1	0	0	0	0
M136	0	0	0	0	0	0	0	0	0	0
M135	0	0	1	1	0	1	0	0	0	1
M134	0	0	0	0	0	0	0	0	0	0
M133	0	0	0	0	0	0	0	0	0	0
M132	0	0	0	0	0	0	0	0	0	0
M131	0	0	0	0	0	0	0	0	0	0
M130	0	0	0	0	0	0	0	1	0	0
M13	0	0	0	0	0	0	0	0	0	0
M129	0	0	0	0	0	0	0	0	0	0
M128	0	0	0	0	0	0	0	0	0	0
M127	0	0	0	0	0	0	0	0	0	0
M126	0	0	0	0	0	1	0	0	0	0
M125	0	0	0	0	0	0	0	0	0	0
M124	0	0	0	0	0	0	0	0	0	0
M123	0	0	0	0	0	0	0	0	0	0
M122	0	0	0	0	0	0	0	0	0	0
M121	0	0	0	0	0	0	0	0	0	0
M120	0	1	0	1	0	1	0	0	0	0
M12	0	0	0	0	0	0	0	0	0	0
M119	0	0	0	0	0	0	0	0	0	0
M118	0	0	0	0	0	0	0	0	0	0
M117	0	0	0	0	0	0	0	0	0	0
M116	0	0	0	0	0	0	0	0	0	0
M115	0	0	0	0	0	0	0	0	0	0
M114	0	0	0	0	0	1	0	0	0	0
M113	0	0	0	0	0	0	0	0	0	0
M112	0	0	0	0	0	0	0	1	0	0
M111	0	0	0	0	0	0	0	0	0	0
M110	0	1	0	1	1	2	0	0	0	0
M11	0	0	0	0	0	0	0	0	0	0
M109	0	0	0	0	0	0	0	0	0	0
M108	0	0	0	0	0	0	0	0	0	0
M107	0	0	0	0	0	0	0	0	0	0
M106	0	0	0	0	0	0	0	1	0	0

Appendix 22: Hengdalu Phase 1 - 5 Grave Inventory

Burial	Buckle	ButtonB	ButtonC	Ttlbuck	Bzebangle	TtlBze	Gold	Jadedisc	Stone	Woodbgle
M105	0	0	0	0	0	0	0	0	0	0
M104	0	0	0	0	0	1	0	0	0	0
M103	0	0	0	0	0	0	0	0	0	0
M102	0	0	0	0	0	0	0	0	0	0
M101	0	0	0	0	0	0	0	1	0	2
M100	0	0	0	0	0	0	0	0	0	0
M10	0	0	0	0	0	0	0	0	0	0
M1	0	0	0	0	0	1	0	0	0	0

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Report Type	Date	Shelf number	Phase	Unit	Level	Paste Texture	Paste Density
34:1	Aa2	3/15/2005	4	2	T3	0	Sand	Friable
1:4	b1	3/24/2005	0	2	T3	0	Sand	Friable
11:1	A4	3/24/2005	0	4	T8	1	Sand	Friable
52:2	Ab2	3/14/2005	3	2	T8	2	Sand	Friable
23:1	Ab2	3/15/2005	4	4	T3	2	Sand	Friable
21:5	A4		12	4	T5	2	sand	Friable
14:2	A3	3/14/2005	1	3	T4	2	Sand	Compact
15:1	A4	3/22/2005	10	3	T3	2	Sand	Friable
27:1	A3	3/14/2005	1	4	T5	2	Sand	Friable
43:3	b2	3/23/2005	18	3	T8	2	Sand	Friable
75:2	A3	3/23/2005	10	3	T7	2	Sand	Friable
16:2	b3	3/14/2005	3	4	T4	2		
37:2	A2	3/23/2005	8	3	T1/T3	3	Sand	Friable
73:3	A3	3/23/2005	18	3	T4	3	Silt	
48:1	A4	3/14/2005	3	4	T3	3	Sand	Friable
114:5	Aa2		3	2	T5	3	Sand	Friable
84:2	Aa3	3/14/2005	2	3	T7	3	Sand	Friable
79:2	Aa3	3/23/2005	8	3	T5	3	Silt	Compact
79:3	Aa3	3/15/2005	4	3	T5	3	Sand	Friable
53:1	Aa4	3/14/2005	3	4	T4	3	Sand	Friable
45:2	Aa4	3/23/2005	8	4	T7/T8	3		Friable
82:2	Ab1	3/14/2005	1	3	T6	3	Sand	Compact
71:2	Ab2	3/14/2005	2	3	T4	3		
63:6	Ab2	3/24/2005	7	3	T6	3	Silt	Compact
74:2	Ab2	3/14/2005	2	3	T4	3	Sand	Friable
68:3	Ab2	3/14/2005	2	3	T4	3		
69:3	Ab3	3/23/2005	10	3	T8	3	Sand	Friable
59:5	Ab3		10	4	T6	3	Sand	Friable
79:6	A3	3/23/2005	18	3	T5	3	Sand	Friable
54:2	A3	3/14/2005	1	3	T5	3	Sand	Friable
44:4	Ab1	3/23/3005	19	2	T8	3		
72:3	A3	3/23/2005	8	3	T4	3	Sand	Friable
57:3	A3	3/14/2005	2	4	T5	3	Sand	Friable
77:1	A3	3/14/2005	2	3	T7	3	Sand	Compact
62:2	A3	3/23/2005	18	3	T6	3	Sand	Friable
61:1	A3		0	3	T7/T8	3	Sand	Friable
58:3	b2	3/14/2005	1	3	T6	3	Sand	Friable
70:3	b1	3/14/2005	2	3	T5	3	Sand	Friable
100:2	Aa2		19	2	T3/T4	4	Silt	Compact
105:4	Aa2	3/14/2005	1	2	T3/T4	4		Friable
87:1	Aa3	3/14/2005	2	3	T3	4	Silt	Friable
93:3	Aa3	3/14/2005	1	3	T7	4	Sand	Friable
92:1	Ab1	3/23/2005	10	3	T5	4		
104:5	Ab1	3/23/2005	18	2	T5	4	Sand	Friable
87:3	A3		0	3	T3	4	Sand	Friable
105:6	Aa2	3/22/2005	10	2	T3/T4	4	Sand	Friable
99:4	A2	3/22/2005	10	2	T5	4	Sand	Friable
41:2	b2	3/14/2005	1	2	T3/T4/T5	4		Friable
154:4	Aa1	3/22/3005	10	1	T5	5	Sand	Friable
119:1	Aa2	3/23/2005	10	2	T7	5		
133:3	Aa2	3/14/2005	3	2	T3	5	Sand	Friable

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Report Type	Date	Shelf number	Phase	Unit	Level	Paste Texture	Paste Density
109:5	Aa2	3/23/2005	8	2	T3	5	Silt	Compact
118:2	Aa2		0	2	T7	5	Sand	Friable
101:6	Aa2	3/24/2005	0	2	T3	5	Silt	Compact
106:4	Aa2	3/24/2005	0	2	T7	5	Sand	Compact
133:4	Aa2	3/23/2005	19	2	T3	5	Silt	Compact
108:3	Aa2	3/23/2005	19	2	T8	5	Silt	
121:2	Aa2	3/14/2005	1	2	T5	5	Silt	Friable
123:7	Aa2	3/15/2005	4	2	T3	5	Sand	Compact
151:2	Aa2	3/15/2005	4	2	T5	5	Sand	Friable
96:4	Ab1	3/14/2005	3	3	T7	5	Sand	Friable
110:5	Ab1	3/24/2005	0	2	T5	5	Sand	Compact
103:5	Ab1	3/14/2005	1	2	T5	5	Sand	Friable
113:3	Aa2	3/14/2005	3	2	T4	5	Sand	Friable
148:1	Aa2	3/23/2005	18	2	T5	5	Sand	Friable
122:4	A2	3/23/2005	8	2	T3	5	Sand	Friable
115:2	A1	3/15/2005	4	2	T8	5	Sand	Friable
136:1	Aa1	3/23/2005	18	1	T8	5	Sand	Friable
138:3	A2	3/14/2005	1	2	T5	5	Sand	Friable
154:6	Aa1	3/14/2005	2	1	T5	5	Sand	Friable
149:1	Aa2	3/25/2005	0	2	T5	5	Sand	Friable
143:4	A2		1	2	T7	5	Silt	Friable
154:7	Aa1	3/22/2005	11	1	T5	5	Sand	Friable
96:3	Ab1		12	3	T7	5	Sand	Friable
170:4	Aa1	3/14/2005	3	1	T5	6		
132:3	Aa1	3/23/2005	8	2	T4	6	Sand	Friable
165:1	Aa1		19	1	T5	6	Sand	Compact
180:3	Aa1	3/14/2005	3	1	T5	6	Silt	Friable
185:3	Aa1	3/14/2005	3	1	T5	6	Sand	Compact
178:3	Aa1	3/14/2005	3	1	T5	6	Sand	Friable
183:2	Aa1	3/14/2005	3	1	T5	6	Sand	Friable
164:1	Aa1	3/24/2005	0	1	T5	6	Sand	Compact
179:4	Aa1	3/24/2005	0	1	T3	6		Compact
130:5	Aa1	3/14/2005	1	2	T8	6	Sand	Friable
135:5	Aa1	3/15/2005	4	2	T3	6	Sand	Friable
167:3	Aa1		0	1	T5	6	Sand	Friable
134:7	Aa1	3/15/2005	4	2	T4	6		
117:1	Aa2	3/14/2005	3	2	T7	6	Sand	Friable
141:6	Aa2	3/23/2005	10	2	T3	6	Sand	Friable
188:3	B1	3/23/2005	10	1	T5	6	Sand	Friable
156:2	B1	3/23/2005	19	1	T3	6	Silt	Compact
147:3	B1	3/23/2005	8	2	T5	6	Silt	Compact
185:5	B2	3/23/2005	10	1	T5	6	Sand	Friable
181:5	B2	3/23/2005	18	1	T5	6	Silt	Compact
162:3	B2	3/14/2005	1	1	T7	6		
131:6		3/23/2005	8	2	T7/T8	6	Sand	Friable
175:2	Aa1	3/23/2005	8	1	T5	6	Sand	Compact
179:2	Aa1	3/25/2005	0	1	T3	6	Sand	Compact

Appendix 23: Hengdalu Tripod Vessels

Vessel#	%Inclusions	VesselHt	NeckHt	Neck Width	Mouth Diameter	Max Diameter
34:1	0	17.7	3.87	12.3	15.1	14.6
1:4	0	15.5	4.11	9.5	12.72	11.5
11:1	0	16.4	3.31	11.1	14.08	14.1
52:2	0	17.5	0	11.56	13.36	13.76
23:1	0	16.1	3.92	10.5	12.65	12.9
21:5	0	19.1	3.5	11.7	14.23	15.1
14:2	0	15.6	2.98	12.8	13.69	13.4
15:1	15	18.6	3.08	11.3	13.23	14.4
27:1	10	16.9	3.61	10.3	12.62	12.6
43:3	0	16.8	3.12	11.07	12.57	11.37
75:2	15	17.7	3.25	11.05	14.35	15.7
16:2	0	14.9	2.76	13	11.85	14.1
37:2	10	15.4	3.67	10.1	11.56	11.7
73:3	0	17.4	4.1	11.4	12.79	14.2
48:1	50	18.5	3.16	10.62	13.12	12.82
114:5	0	15.8	3.47	10.15	12.75	11.9
84:2	0	15.1	3.89	9.62	12.27	10.32
79:2	0	16.8	4.2	9.8	11.78	12.8
79:3	10	19.4	4.37	14.1	16.9	15.7
53:1	0	16.9	4.18	11.64	15.04	14.64
45:2	0	17.2	2.96	11.6	13.18	13.9
82:2	15	16	3.76	9	10.13	11.3
71:2	0	16.6	4.01	9.45	11.36	10.9
63:6	0	15.7	3.91	11.4	12.71	13
74:2	0	15.6	3.59	10.29	12.41	11.91
68:3	0	15.4	3.71	10.64	12.84	12.9
69:3	10	17.4	4.13	12.26	14.06	14.04
59:5	1	16.4	3.6	10.8	12.7	12.4
79:6	0	14.1	3.42	9.4	11.31	11.9
54:2	0	14.6	2.78	8.33	10.63	10.7
44:4	0	14.1	3.11	10.63	12.63	12.7
72:3	0	21	4.57	14	16.4	17
57:3	0	13.2	2.26	8.22	10.25	10.25
77:1	0	15.6	3.53	10.45	12.03	12.55
62:2	0	16.2	3.69	11.4	12.61	12.6
61:1	0	15.5	3.11	10.5	12.38	13.1
58:3	0	12.5	3.33	10.74	12.54	11.34
70:3	0	14.5	3.29	8.62	11.1	11.7
100:2	0	17.3	4	10.1	13.11	13.1
105:4	0	16.2	4.22	10.08	13.98	12.08
87:1	0	15.9	3.74	10.1	12.9	12
93:3	0	13.9	2.82	10.5	12.72	12.4
92:1	0	16	3.71	11.58	13.58	13.38
104:5	0	14.4	3.4	10	11.47	12.1
87:3	0	17.4	3.97	11.8	14.24	14.2
105:6	20	16.4	4.14	11.27	14.57	13.17
99:4	10	16.8	3.36	12.37	13.77	13.47
41:2	0	13.8	2.69	10.77	12.17	11.87
154:4	0	18.5	5.05	13.2	16.6	15.3
119:1	0	26	5.7	15.1	21.4	19.7
133:3	0	17	3.63	10.92	13.72	14.32

Appendix 23: Hengdalu Tripod Vessels

Vessel#	%Inclusions	VesselHt	NeckHt	Neck Width	Mouth Diameter	Max Diameter
109:5	0	15.9	3.86	8.5	11.63	11.1
118:2	0	16.6	3.74	10.61	13.01	12.81
101:6	0	14.7	3.34	11	12.9	13.9
106:4	0	17.5	4.38	11.82	15.42	13.42
133:4	0	20.4	5.01	12.8	15.58	15.2
108:3	0	18.1	4.34	11.79	14.09	13.39
121:2	10	0	3.91	9.27	0	0
123:7	0	15.7	3.56	10.98	14.08	13.08
151:2	0	20.6	5.06	14.4	18.7	17.5
96:4	15	14.6	3.33	7.6	10.76	9.86
110:5	5	14.2	3.36	9.2	10.91	11.1
103:5	20	15	3.43	10	11.02	11.9
113:3	5	15.1	3.87	10.9	13.1	13.4
148:1	0	13.6	3.22	10	11.53	12.3
122:4	0	17.6	4.3	10.2	13.18	12.9
115:2	0	15.5	3.41	9.74	12.44	11.64
136:1	0	15.1	4	11.16	13.56	12.78
138:3	15	16.8	3.74	11.3	13.63	14.1
154:6	0	17.7	4.52	10.6	15.5	12.4
149:1	0	15.9	3.68	9.4	12.1	11.8
143:4	0	14.4	2.24	9.8	10.99	12.4
154:7	0	18.9	4.41	12.6	17.2	14.3
96:3	0	17.4	3.85	11.7	13.47	13.6
170:4	0	18.4	4.9	12.6	17.2	14.2
132:3	0	21.8	5.89	14.4	18.8	15.8
165:1	0	13.9	2.91	9.3	11.05	11.6
180:3	5	15.2	3.76	9.64	12.84	11.64
185:3	0	17.7	4.16	11.27	14.07	12.97
178:3	5	18	4.79	11.83	15.23	13.23
183:2	0	17.4	5.09	8.92	13.52	11.22
164:1	0	16.5	4.29	10.23	12.93	12.23
179:4	0	18.4	3.92	11.08	15.08	13.48
130:5	10	15.9	3.92	9.75	13.95	11.45
135:5	0	17.4	4.03	10.68	13.78	12.28
167:3	0	18.8	3.97	12.73	15.93	14.03
134:7	0	20.1	5.16	14.92	18.1	14.7
117:1	0	19.3	4.41	12.04	15.74	14.94
141:6	5	18.3	3.8	10.5	13.25	12.5
188:3	10	18.1	4.85	10.34	14.04	13.74
156:2	0	18.7	4.42	12.8	16.8	14.4
147:3	0	16.2	4.69	10.33	13.73	11.33
185:5	10	21	4.95	13.6	16.6	16.8
181:5	0	17.2	4.26	10.6	13.17	13.7
162:3	0	27.4	6.9	18.7	23.7	23.3
131:6	0	18.5	4.76	13	16.8	15.5
175:2	10	16.3	4.19	10.35	13.65	12.35
179:2	0	15.3	3.98	11.6	13.3	13

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Base Width	Ht to max diameter	Rim Shape	Rim Thickne	Lip Shape	Leg Ht	Leg Width
34:1	0	7.1	0	0.43	0	9.51	4.17
1:4	0	6.1	0	0.64	0	8.4	3.12
11:1	6.88	6.3	0	0.5	0	7.49	2.92
52:2	0	6.9	1	0.67	0	8.84	3.34
23:1	0	6.9	1	0.58	0	8.14	3.58
21:5	3.2	7.8	0	0.4	0	8.31	5.72
14:2	5.17	6.2	0	0.43	0	6.18	2.45
15:1	5.23	4.6	2	0.5	0	8.94	2.91
27:1	5.55	6.35	0	0.46	0	7.69	2.58
43:3	5.87	5.3	2	0.48	8	7.5	2.56
75:2	5.9	6.6	2	0.58	0	7.83	2.94
16:2	7.79	9.4	0	0.56	0	7.44	2.46
37:2	0	6.4	2	0.45	0	6.96	2.63
73:3	0	7.4	2	0.43	0	7.47	3.55
48:1	0	6.8	0	0.44	0	6.82	2.49
114:5	0	6.5	0	0.28	0	7.15	2.74
84:2	0	6.63	0	0.32	0	7.38	2.52
79:2	0	7.3	2	0.5	0	6.37	3.24
79:3	0	6.8	2	0.45	0	10.73	4.08
53:1	0	7.1	1	0.6	0	9.74	4
45:2	0	6.8	0	0.46	0	7.73	2.86
82:2	0	6.28	0	0.47	0	8.4	2.65
71:2	0	6.45	0	0.43	0	8.66	2.93
63:6	0	5.8	1	0.53	0	7.18	2.75
74:2	0	5.75	1	0.55	0	7.85	3.59
68:3	0	5.6	1	0.63	0	8.11	3.33
69:3	0	6.8	1	0.49	0	8.63	3.42
59:5	0	6.6	1	0.57	0	8.51	3.26
79:6	2.92	5.5	0	0.36	0	6.59	3.01
54:2	4.02	6.4	0	0.37	0	5.31	2.12
44:4	4.44	5.2	1	0.39	0	6.42	2.86
72:3	4.87	8.9	0	0.49	0	9.3	3.41
57:3	4.89	5.2	0	0.56	0	6.65	2.74
77:1	5.32	6.45	0	0.62	1	6.09	2.16
62:2	5.47	6.9	2	0.45	0	6.61	2.68
61:1	5.48	9.5	0	0.6	0	6.67	2.49
58:3	6.18	4.8	0	0.5	0	5.84	2.29
70:3	6.42	6	1	0.45	0	6.21	2.07
100:2	0	6.5	0	0.34	0	7.81	2.73
105:4	0	7	0	0.51	0	8.01	2.91
87:1	0	6.8	0	0.4	0	6.81	3.44
93:3	0	4.6	0	0.54	0	8	2.87
92:1	0	6.5	1	0.48	0	7.83	3.5
104:5	0	5.6	2	0.39	0	7.44	2.6
87:3	3.53	6.3	2	0.42	0	8.42	3.02
105:6	4.36	6.8	1	0.46	0	7.29	3.12
99:4	5.6	7	0	0.52	0	6.83	2.59
41:2	6.43	4.9	0	0.46	0	5.36	2.46
154:4	0	7	0	0.46	0	8.89	3.32
119:1	0	11.1	2	0.49	0	11.86	4.14
133:3	0	7.3	0	0.51	0	8.84	3.07

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Base Width	Ht to max diameter	Rim Shape	Rim Thickne	Lip Shape	Leg Ht	Leg Width
109:5	0	7.7	1	0.54	0	6.88	3.61
118:2	0	6.2	2	0.44	0	7.57	3.29
101:6	0	6.4	2	0.5	0	5.98	2.83
106:4	0	6.7	2	0.5	0	9.29	3.52
133:4	0	8.1	0	0.55	0	8.17	3.49
108:3	0	8.3	1	0.56	0	8.48	2.73
121:2	0	6.93	0	0.54	0	8.08	3.94
123:7	0	6.2	0	0.37	0	6.87	2.61
151:2	0	8.5	0	0.43	0	9.66	3.26
96:4	0	7.5	2	0.54	0	6.95	2.89
110:5	0	6.1	2	0.45	0	7.27	2.68
103:5	0	5.92	1	0.75	0	7.63	2.77
113:3	3.6	6.6	2	0.37	0	7.65	3.28
148:1	3.79	5.4	0	0.38	0	4.93	2.17
122:4	4.16	7.7	2	0.53	0	8.22	3.17
115:2	4.54	6.4	2	0.38	0	8.35	3.11
136:1	4.65	6.5	0	0.49	0	7.24	2.65
138:3	4.73	6.7	0	0.48	0	6.84	2.9
154:6	4.95	6.35	0	0.33	0	9.39	3.96
149:1	5	5.9	2	0.47	0	6.6	2.47
143:4	5.22	5.6	0	0.49	1	6.88	2.71
154:7	5.56	7	2	0.56	0	10.12	4.52
96:3		7.2	1	0.57	0	8.94	3.52
170:4	0	6.7	0	0.51	0	10.23	3.51
132:3	0	9.6	0	0.4	0	9.64	3.15
165:1	0	5.4	0	0.44	0	6.94	2.97
180:3	0	8.9	0	0.37	0	7.29	3.36
185:3	0	6.65	0	0.45	1	8.36	3.15
178:3	0	6.3	0	0.52	0	9.5	3
183:2	0	10.4	1	0.44	0	8.95	3.73
164:1	0	6	2	0.45	0	9.26	3.55
179:4	0	7.2	0	0.43	0	9.13	2.64
130:5	0	6.35	0	0.48	0	8.34	2.82
135:5	0	7.4	0	0.28	0	8.86	3.38
167:3	0	8.43	0	0.41	0	8.74	3.25
134:7	0	7.9	0	0.46	0	9.82	3.37
117:1	0	7.5	0	0.41	0	9.01	3.56
141:6	0	7.3	2	0.39	1	8.91	3.12
188:3	0	7.9	2	0.46	0	8.76	3.69
156:2	0	8	0	0.46	0	9.61	3.27
147:3	0	6.7	0	0.37	0	8.32	3.07
185:5	0	9.6	0	0.44	0	10.93	3.85
181:5	0	7.7	2	0.43	0	7.3	3.02
162:3	0	12.5	2	0.47	0	12.67	4.61
131:6	0	7.2	2	0.44	0	9	3.62
175:2	3.72	7.1	2	0.43	1	7.41	2.44
179:2	3.92	9	0	0.43	0	6.39	2.3

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Leg Shape	Ruding	Loop Handle	Length of ru	Width of rud	Comments	
34:1	Straight	2	0	2.71	0.94		
1:4	Straight	0	1	3.86	0.91		
11:1	Concave	0	0	0	0		
52:2		0	0	0	0		
23:1		0	0	0	0		
21:5	Straight	0	0	0	0		
14:2	Concave	0	0	0	0		
15:1		2	0	1.72	0.64		
27:1	Concave	0	0	0	0	plate 139.9	
43:3	Concave	0	0	0	0		
75:2	Concave	0	0	0	0	yemai base	
16:2		1	0	0	0		
37:2	Straight	0	0	0	0		
73:3	Straight	2	0	2.46	0.91		
48:1		0	0	0	0		
114:5		0	0	0	0		
84:2		0	0	0	0		
79:2	Straight	0	1	2.54	0.64		
79:3	Straight	0	0	0	0		
53:1		0	0	0	0		
45:2	Straight	0	1	4.09	1.52		
82:2		0	0	0	0		
71:2		0	0	0	0		
63:6	Straight	0	0	0	0		
74:2		0	0	0	0		
68:3		0	0	0	0		
69:3	Straight	0	0	0	0		
59:5	Straight	0	0	0	0		
79:6	Straight	0	0	0	0		
54:2		2	0	1.34	0.79	yemai and w/handle	
44:4		0	0	0	0		
72:3		0	0	0	0		
57:3		0	0	0	0		
77:1		2	0	1.78	1.17	yemai base	
62:2	Straight	0	0	0	0		
61:1		0	0	0	0		
58:3		0	0	0	0		
70:3		0	0	0	0		
100:2	Straight	0	0	0	0		
105:4		2	0	1.15	0.59		
87:1		0	0	0	0		
93:3		0	0	0	0		
92:1	Straight	0	1	2.91	0.94		
104:5	Straight	0	0	0	0		
87:3	Straight	0	0	0	0		
105:6	Straight	2	0	1.43	0.76		
99:4	Concave	0	0	0	0		
41:2	Concave	0	0	0	0	plate 139.7	
154:4	Straight	2	0	1.43	0.73		
119:1	Straight	2	0	1.61	0.88		
133:3		0	0	0	0		

Appendix 23: Hengdalu Tripod Vessels

Vessel#	Leg Shape	Ruding	Loop Handle	Length of ru	Width of rud	Comments	
109:5	Straight	2	0	1.55	0.96		
118:2		0	0	0	0		
101:6	Straight	0	0	0	0		
106:4	Straight	0	0	0	0		
133:4	Straight	2	0	1.71	1.32		
108:3		0	0	0	0		
121:2		1	0	1.69	0.73		
123:7	Straight	0	0	0	0		
151:2		0	0	0	0		
96:4		0	1	2.77	0.89		
110:5		0	1	2.8	0.98		
103:5		0	0	0	0		
113:3		0	0	0	0		
148:1	Straight	0	0	0	0		
122:4	Straight	0	0	0	0		
115:2	Straight	0	0	0	0		
136:1	Straight	0	0	0	0		
138:3		0	0	0	0		
154:6		2	0	1.3	0.62		
149:1	Straight	2	0	1.78	0.51		
143:4		0	0	0	0	yemai base	
154:7	Straight	0	0	0	0		
96:3	Straight	0	0	0	0		
170:4		0	1	3.8	1.86		
132:3	Straight	1	0	2.09	0.76		
165:1		0	0	0	0		
180:3		2	0	1.95	1.16		
185:3		1	0	1.82	0.65		
178:3		1	0	1.61	0.96		
183:2		2	0	1.67	0.99		
164:1	Straight	0	0	0	0		
179:4	Straight	2	0	1.62	1.1		
130:5		0	0	0	0		
135:5	Straight	2	0	1.46	0.96		
167:3		0	0	0	0		
134:7	Straight	0	0	0	0		
117:1		2	0	1.16	0.9		
141:6	Straight	2	0	2.27	0.68		
188:3	Straight	2	0	1.7	0.66		
156:2		1	0	2.1	0.67		
147:3	Straight	1	0	1.7	0.7		
185:5	Straight	0	0	0	0		
181:5	Straight	0	0	0	0		
162:3		0	1	4.23	1.03		
131:6	Straight	2	0	2.09	0.71		
175:2	Concave	0	0	0	0	concave legs	
179:2	Straight	0	0	0	0		

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Report Type	Date	Shelf #	Phase	Unit	Level	Paste Texture	Paste Density
34:2	Aa1	3/23/2005	18	2	T3	0	Silt	Compact
44:2	Ab		24	2	T8	2	Silt	Compact
21:4	Ab	3/14/2005	2	4		2	Silt	Compact
40:2	Aa3	3/25/2005	0	4	T3/T5	2	Sand	Friable
25:3	Aa3	3/25/2005	0	4	T3	2	Sand	Friable
22:3	Ab	3/22/2005	24	4	T8	2		Friable
23:2	Aa3	3/25/2005	0	4	T3	2		
43:1	Ab	3/24/2005	0	3	T8	2	Sand	Friable
75:3	Ab	3/24/2005	0	3	T7	2	Silt	Compact
17:4	Aa3	3/25/2005	0	4	T4	2	Silt	Compact
39:1	Ab	3/14/2005	3	4	T3	2	Sand	Friable
17:1	Aa3		0	4	T4	2	Silt	Compact
14:1	Ab	3/15/2005	4	4	T4	2	Sand	Friable
77:3	Ab		4	3	T7	3	Sand	Friable
59:4	Aa3	3/14/2005	3	4	T6	3	Sand	Friable
69:2	Aa3	3/14/2005	2	3	T8	3	Sand	Friable
58:4	Ab	3/14/2005	2	3	T6	3	Sand	Friable
69:6	Aa3		24	3	T8	3	Silt	Friable
51:2	Ab	3/25/2005	0	3	T7/T8	3	Silt	Compact
59:3	Ab	3/25/2005	0	4	T6	3	Sand	Friable
102:3	Ab		24	3	T5	3	Sand	Friable
72:1	Ab	3/25/2005	0	3	T4	3	Sand	Friable
19:2	Aa3		0	4	T1	3	Silt	Compact
72:2	Ab	3/21/2005	22	3	T4	3	Silt	Friable
54:4	Aa2	3/17/2005	22	3	T8	3	Sand	Friable
114:4	Ab	3/24/2005	0	2	T5	3	Sand	Compact
78:6	Ab	3/24/2005	0	3	T7/T8	3	Sand	Friable
85:2	Ab	3/25/2005	0	3	T7	3	Sand	Friable
67:1	Ab	3/25/2005	0	3	T6	3	Sand	Friable
53:2	Ab	3/25/2005	0	4	T4	3	Sand	Friable
86:2	Ab	3/25/2005	0	3	T7	3		Compact
76:4	Aa2	3/14/2005	1	3	T7	3	Sand	Friable
8:2	Ab	3/25/2005	0	4	T7	3	Sand	Friable
82:1	Ab		22	3	T6	3		Friable
78:4	Aa3		12	3	T7/8	3	Silt	Compact
73:5	Ab		0	3	T4	3		Friable
83:2	Aa3		0	3	T2/T3	3	Sand	Friable
37:1	Aa1		12	3	T1/T3	3	Silt	Compact
88:1	Ab		11	3	T8	4		
99:3	Aa1		24	2	T5	4	Silt	Compact
105:5	Aa1	3/25/2005	0	2	T3/T4	4	Sand	
99:2	Ab	3/25/2005	0	2	T5	4	Silt	
100:1	Aa1		1	2	T3/T4	4	Sand	
92:2	Ab	3/25/2005	0	3	T5	4	Sand	
41:1	Ab	3/25/2005	0	2	5/T6	4	Sand	Friable
94:2	Aa2	3/25/2005	0	2	T7	4		
93:2	Aa2	3/21/2005	23	3	T7	4	Silt	Compact
87:2	Aa3	3/21/2005	11	3	T3	4		
119:4	Aa2	3/23/2005	19	2	T7	5	Sand	Friable
140:1	Aa1		24	2	T5	5	Silt	Compact
168:2	Ab	3/24/2005	0	1	T5/T6	5	Sand	Friable
122:3	Aa2	3/24/2005	0	2	0	5	Sand	Friable
119:3	Aa2	3/14/2005	2	2	T7	5	Sand	Friable
139:1	Aa2	3/15/2005	4	2		5		Compact

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Report Type	Date	Shelf #	Phase	Unit	Level	Paste Texture	Paste Density
96:1	Ab	3/25/2005	0	3	T7	5	Sand	
103:6	Ab	3/25/2005	0	2	T5	5		
148:2	Aa2	3/25/2005	0	2	T5	5	Sand	Compact
111:3	Aa2	3/25/2005	0	2	T4/T6	5	Sand	Compact
115:3	Aa2	3/21/2005	23	2	T8	5	Sand	Friable
154:5	Aa2	3/21/2005	23	1	T5	5	Sand	compact
150:2	Aa2	3/15/2005	4	2	T5	5	Sand	
151:1	Aa1		12	2	T5	5	Sand	Friable
103:4	Aa2		0	2	T5	5		
146:2	Aa2		11	2	T5	5	Silt	Compact
186:3	Aa1	3/15/2005	4	1	T5	6	Sand	
130:1		3/14/2005	3	2	T8	6	Sand	Compact
157:1	Aa1	3/25/2005	0	1	T5	6	Sand	Friable
171:2	Aa1	3/25/2005	0	1	T3/T5	6	Sand	Compact
141:4	Aa1		24	2	T3	6	Sand	Friable
187:3	Aa1		24	1	T3	6	Silt	Compact
176:2	Aa1		24	1	T5	6	Silt	Compact
174:2	Aa1		24	1	T3	6	Silt	Compact
188:1	Aa1	3/14/2005	3	1		6	Sand	Friable
135:6		3/14/2005	2	2	T3	6	Silt	
159:1	Aa1	3/23/2005	18	1	T7	6	Sand	Friable
183:1	Aa1	3/17/2005	22	1	T5	6	Silt	Compact
188:2	Aa1	3/24/2005	0	1		6	Sand	Friable
162:4	Aa1	3/24/2005	0	1	T7	6	Sand	Friable
187:4	A1	3/25/2005	0	1	T3	6	Silt	Compact
178:4	Aa1	3/25/2005	0	0	T5	6	Sand	
152:5	Aa1	3/25/2005	0	2	T5	6	Sand	Compact
147:2	Aa1	3/23/2005	18	2	T5	6	Sand	Friable
158:5	Aa1	3/24/2005	0	1	T3	6	Sand	Friable
127:6	Aa1	3/25/2005	0	2	T7	6	Sand	Friable
129:2	Aa2		0	2	T7/T8	6	Silt	Compact
18:3	B	3/15/2005	4	4	T5	2	Silt	Compact
20:2	B	3/17/2005	22	4	T5	2	Silt	Compact
68:2	B	3/25/2005	0	3	T4	3		
12:1	B	3/21/2005	23	4	T6	1	Silt	Compact
16:1	B	3/15/2005	4	4	T4	2	Silt	Compact
50:3	B	3/21/2005	23	4	T4	2		
81:4	B		0	3	T7	3	Silt	Compact
10:2	B		0	4	T7	1	Silt	Compact
13:1	B	3/25/2005	0	4		0		

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	%Inclusions	Vessel Ht	Body Ht	Neck Ht	Neck Width	Max Diameter	Base Width
34:2	0	16	12.04	3.96	10.5	13.5	6.04
44:2	0	14.8	10.88	3.92	8.9	11	5.63
21:4	0	17.4	12.15	5.25	8.8	15.2	5.51
40:2	0	17	13.24	3.76	12	13.2	5.9
25:3	0	15.4	11.63	3.77	9.7	12.6	7
22:3	0	18.7	14.48	4.22	10.5	13.5	6.16
23:2	0	15	11.33	3.67	9.5	12.5	8.1
43:1	0	13	10.27	2.73	9.97	10.57	6.52
75:3	0	16.4	12.86	3.54	10.5	14	6.68
17:4	0	17	13.43	3.57	9.9	12.8	6.4
39:1	10	19.8	14.97	4.83	10.9	14.4	6.95
17:1	0	13.7	10.22	3.48	9.6	11.4	5.34
14:1	10	17.7	13.94	3.76	10.8	13.7	6.53
77:3	0	16.6	12.79	3.81	10.5	13.2	6.53
59:4	0	15.9	12.04	3.86	9.9	12.4	6.3
69:2	0	14.9	11.41	3.49	9.16	11.56	5.59
58:4	0	16.1	12.37	3.73	11.4	14.4	6.2
69:6	0	16.6	12.89	3.71	10.5	13.6	6.37
51:2	0	14	10.35	3.65	9.7	12.9	7.6
59:3	0	17	12.96	4.04	11.7	12.8	6
102:3	0	15.6	12.63	2.97	9.7	12.2	6.38
72:1	10	12.9	9.4	3.5	8.1	9.9	6.2
19:2	0	11.8	8.87	2.93	7.8	9.7	5.63
72:2	0	16.4	13.2	3.2	10.54	14.2	8.51
54:4	0	15.6	11.73	3.87	9.2	12.3	6.44
114:4	0	15.7	12.34	3.36	10.1	12.8	6.96
78:6	0	14.3	10.55	3.75	10.5	12.6	6.29
85:2	0	15.2	11.85	3.35	9.3	11.5	5.4
67:1	0	14.7	10.98	3.72	10.2	12.4	7.2
53:2	5	12.8	9.76	3.04	10.8	12.1	6.3
86:2	0	12.3	9.18	3.12	7.6	9.9	5.3
76:4	0	14.5	10.6	3.9	7.61	10.21	6.08
8:2	15	16.9	13.37	3.53	11.5	15.2	6.2
82:1	0	14.3	11.09	3.21	8.2	11.2	5.26
78:4	0	14.3	11.34	2.96	8.9	11.5	5.58
73:5	0	14.1	10.8	3.3	8.9	11.2	6.2
83:2	5	15.6	11.71	3.89	10.5	12.7	6.71
37:1	0	17	12.01	4.99	10.18	12.48	6.89
88:1	0	14	10.3	3.7	10	12.7	7.29
99:3	0	13.2	9.69	3.51	9.5	12.2	6.75
105:5	0	15.5	11.13	4.37	9.6	11.9	6.9
99:2	0	9.4	7.62	1.78	7.05	8.48	4.5
100:1	15	14.9	10.96	3.94	8.8	12	6.03
92:2	10	13.3	9.5	3.8	10	11.3	5.3
41:1	0	12.2	9.24	2.96	10.6	11.5	5.5
94:2	0	14.3	10.9	3.4	9.3	11.5	5.5
93:2	0	17.2	12.8	4.4	11	14	6.04
87:2	0	14.6	11.06	3.54	10.14	12.44	8.02
119:4	0	14.6	10.89	3.71	8.71	11.11	5.92
140:1	0	13.9	9.76	4.14	8.88	11.38	6
168:2	0	15.6	11.95	3.65	9.5	12.4	6.54
122:3	0	15.9	11.53	4.37	9.2	12.7	6.26
119:3	40	8.98	6	2.98	4.71	6.21	3.76
139:1	0	18	14.01	3.99	9.4	12.6	6.76

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	%Inclusions	Vessel Ht	Body Ht	Neck Ht	Neck Width	Max Diameter	Base Width
96:1	0	14	10.49	3.51	8.8	10.4	5.4
103:6	0	16	12.67	3.33	10.2	12.4	5.9
148:2	0	12.6	8.67	3.93	8.1	9.9	5.4
111:3	0	17.1	12.51	4.59	10.5	13.5	7.2
115:3	5	15.5	11.15	4.35	10.29	12.19	5.61
154:5	5	16.2	12.73	3.47	9.1	12.5	6.65
150:2	0	12.77	8.72	4.05	9.14	10.37	6.35
151:1	0	16.3	11.7	4.6	8.9	12.1	6.6
103:4	0	16	12.01	3.99	10.2	12.6	6.81
146:2	0	14.7	10.97	3.73	11.1	14.1	7.08
186:3	0	15.9	12.16	3.74	9.8	13	6.8
130:1	0	8.4	2.94	5.46	5.46	7.2	4.45
157:1	0	15.5	10.93	4.57	9.7	12.9	6.7
171:2	0	11.4	8.39	3.01	7.5	8.7	5.2
141:4	0	17.3	12.72	4.58	10	13.1	6.98
187:3	0	17.1	12.32	4.78	9.44	12.44	6.81
176:2	0	12.73	9.49	3.24	6.53	9.06	4.69
174:2	0	16.9	12.69	4.21	9.5	13.5	6.47
188:1	0	18.2	12.4	5.8	11.65	14.4	7.91
135:6	0	16.7	11.51	5.19	9.44	13.1	6.82
159:1	0	14.7	10.68	4.02	9.1	12	7.21
183:1	0	18.7	14.03	4.67	11.3	14.8	6.72
188:2	0	17.1	12.21	4.89	9.7	12.6	6.77
162:4	0	15.4	11.09	4.31	8.9	12.1	6.53
187:4	0	14.1	10.28	3.82	10.2	11.6	6.2
178:4	0	15.9	11.48	4.42	9.4	12.3	6.3
152:5	5	17.5	12.33	5.17	11.7	14.1	6.8
147:2	0	15.5	11.54	3.96	8.26	11.16	5.95
158:5	0	16.5	12.12	4.38	10.5	13.5	6.79
127:6	0	14.4	9.37	5.03	10	12.5	6.3
129:2	0	15.9	11.67	4.23	8.6	11.7	6.92
18:3	5	21.8	3.73	14.4	15.25	18.6	7.04
20:2	0	10.68	2.61	7.63	8.82	10.5	5.3
68:2	0	7.4	2.33	5.33	7.2	5.93	4.2
12:1	0	12.1	2.63	9.8	11.37	12.3	6.52
16:1	0	11.69	3.87	9.63	10.69	11.6	5.8
50:3	0	13.3	2.96	10.7	12.28	12.9	6.56
81:4	0	10.4	2.34	9.1	9.48	10.5	5.91
10:2	0	11.1	2.89	7.7	9.72	9.17	5.63
13:1	0	12.4	2.51	10.2	10.6	12.2	6.9

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Ht to max diameter	Rim Shape	Rim Thickness	Lip Shape	Ruding	Loop Handle
34:2	9	0	0.43	1	1	0
44:2	8.6		0.35	0	0	0
21:4	10.26		0.29	0	0	0
40:2	8		0.4	0	0	0
25:3	7.2	0	0.39	0	0	0
22:3	10		0.31	0	0	0
23:2	8.4		0.38	0	0	0
43:1	5.8	1	0.51	0	0	0
75:3	8.8	2	0.41	0	0	0
17:4	8		0.42	0	1	0
39:1	11		0.55	0	0	0
17:1	7.5	1	0.58	1	0	0
14:1	9	0	0.57	0	0	0
77:3	8.7	2	0.37	0	0	0
59:4	7	0	0.44	0	2	0
69:2	8.4	2	0.46	0	0	0
58:4	7.9		0.57	0	0	0
69:6	9.6	0	0.38	0	0	0
51:2	0	0	0.5	1	0	0
59:3	8.8	2	0.49	0	0	0
102:3	7.9	0	0.37	0	0	0
72:1	6.5	2	0.44	0	0	0
19:2	6.6	0	0.43	0	0	0
72:2	7.6		0.37	0	0	0
54:4	6.8	2	0.37	0	0	0
114:4	7.5	2	0.43	0	0	0
78:6	6.8	0	0.4	0	0	0
85:2	7.6	0	0.37	0	0	0
67:1	7.9	1	0.46	0	0	0
53:2	6.5	2	0.57	0	0	0
86:2	6.3	0	0.42	0	0	0
76:4	7.73		0.39	0	2	0
8:2	7.3	0	0	0	0	0
82:1	8.1	0	0.44	0	0	0
78:4	8.1	0	0.43	0	0	0
73:5	7.6	2	0.52	1	1	0
83:2	7.9	2	0.56	0	1	0
37:1	8.5	2	0.45	0	1	0
88:1	5.3	0	0.44	0	0	0
99:3	7	0	0.38	0	0	0
105:5	7.4	0	0.39	0	0	0
99:2	4.78	0	0.46	0	0	0
100:1	8		0.39	0	0	1
92:2	6.4	2	0.49	0	0	0
41:1	4.8	0	0.42	0	0	0
94:2	7	0	0.52	0	0	0
93:2	8.4	0	0.41	0	0	0
87:2	7.7	0	0.42	1	1	0
119:4	7.8	0	0.33	0	2	0
140:1	7.4	2	0.43	0	0	0
168:2	8.2	2	0.34	0	0	0
122:3	8.8	0	0.47	0	0	0
119:3	5.58		0.43	0	0	0
139:1	9	0	0.5	0	0	0

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Ht to max diameter	Rim Shape	Rim Thickness	Lip Shape	Ruding	Loop Handle
96:1	7.5	0	0.42	0	0	0
103:6	7.1	0	0.5	0	0	0
148:2	6.1	2	0.39	0	0	0
111:3	8.7	1	0.58	0	0	0
115:3	8.3	2	0.44	0	0	0
154:5	9.1	0	0.3	0	0	0
150:2	6.42	1	0.67	0	0	0
151:1	9.9	2	0.44	0	0	0
103:4	8.9		0.44	0	0	0
146:2	7.3	0	0.35	1	0	0
186:3	7.5	0	0.34	1	0	0
130:1	5.48		0.37	0	0	0
157:1	8.3	0	0.45	0	0	0
171:2	5.2	0	0.45	0	0	0
141:4	10.3	0	0.55	0	0	0
187:3	8.7	2	0.33	0	0	1
176:2	7.07	0	0.33	0	0	0
174:2	9.2	2	0.31	0	2	0
188:1	10.97	1	0.46	0	0	0
135:6	9.53		0.4	1	0	0
159:1	7.2	0	0.43	0	0	0
183:1	9.9	2	0.46	1	0	0
188:2	9.5		0.36	0	0	0
162:4	8.5		0.47	0	2	0
187:4	7.6	0	0.44	0	0	0
178:4	7.9	0	0.52	0	0	0
152:5	8.4	0	0.42	0	0	0
147:2	8.3	2	0.52	0	2	0
158:5	8.9	0	0.53	0	0	0
127:6	7.6	2	0.54	0	0	0
129:2	8.9	2	0.38	0	1	0
18:3	8.5		0.45	0	3	0
20:2	4.78	0	0.67	1	0	0
68:2	4.84	0	0.52	0	0	0
12:1	7.3	0	0.49	0	0	0
16:1	6.1	0	0.43	0	0	0
50:3	5.9	0	0.42	0	0	0
81:4	5.6	0	0.58	1	0	0
10:2	6.89		0.41	0	0	0
13:1	6.1	0	0.42	0	0	0

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Length of loop	Width loop	Comments
34:2	1.94	0.74	
44:2	0	0	
21:4	0	0	
40:2	0	0	
25:3	0	0	
22:3	0	0	
23:2	0	0	
43:1	0	0	Small guan
75:3	0	0	
17:4	1.87	0.95	
39:1	0	0	
17:1	0	0	
14:1	0	0	
77:3	0	0	
59:4	1.74	0.78	
69:2	0	0	
58:4	0	0	
69:6	0	0	
51:2	0	0	
59:3	0	0	
102:3	0	0	
72:1	0	0	
19:2	0	0	
72:2	0	0	
54:4	0	0	
114:4	0	0	
78:6	0	0	
85:2	0	0	
67:1	0	0	
53:2	0	0	
86:2	0	0	
76:4	1.19	1	
8:2	0	0	
82:1	0	0	
78:4	0	0	
73:5	1.67	0.67	
83:2	1.81	0.79	
37:1	1.44	0.57	
88:1	0	0	
99:3	0	0	
105:5	0	0	
99:2	0	0	
100:1	1.57	0.69	
92:2	0	0	
41:1	0	0	Rim carinated
94:2	0	0	
93:2	0	0	
87:2	1.35	0.96	
119:4	1.57	0.6	net under ruding
140:1	0	0	impression on
168:2	0	0	
122:3	0	0	
119:3	0	0	
139:1	0	0	

Appendix 24: Hengdalu Guan-jar Vessels

Vessel#	Length of loop	Width loop	Comments
96:1	0	0	
103:6	0	0	
148:2	0	0	
111:3	0	0	
115:3	0	0	
154:5	0	0	
150:2	0	0	
151:1	0	0	
103:4	0	0	
146:2	0	0	
186:3	0	0	
130:1	0	0	on base
157:1	0	0	
171:2	0	0	
141:4	0	0	
187:3	2.12	0.68	
176:2	0	0	
174:2	1.44	0.58	
188:1	0	0	
135:6	0	0	
159:1	0	0	
183:1	0	0	
188:2	0	0	
162:4	1.17	0.68	
187:4	0	0	
178:4	0	0	LBK shape
152:5	0	0	LBK shape
147:2	1.57	0.89	
158:5	0	0	
127:6	0	0	Rim pinched
129:2	2.32	1.2	
18:3	0	0	
20:2	0	0	1 lip handle
68:2	0	0	LBK shape
12:1	0	0	Hu shape?
16:1	0	0	Hu shape?
50:3	0	0	
81:4	0	0	
10:2	0	0	
13:1	0	0	impress

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Report Typ	Date	Shelf numb	Phase	Unit	Level	Paste Textu	Paste Densi	%Inclusions	Vessel Ht	Neck Ht	Neck Width
33:1	C3	3/24/2005	7	4	T7/T8	1	Silt	Compact	0	9.89	3.67	5.36
35:1	C3		0	4	T5	1	Silt	Compact	0	9.41	2.87	4.58
75:1	A3	3/15/2005	4	3	T7	2	Sand	Compact	5	23.9	7.24	9.9
14:3	A3		12	3	T4	2	Silt	Compact	0	20.4	8.1	9.78
22:5	C3	3/17/2005	22	4	T8	2	Silt	Compact	0	9.82	3.1	4.74
17:6		3/24/2005	0	4	T4	2	Sand	Friable	0	9.24	2.41	5.95
36:1	C3		0	4	T6	2	Silt	Compact	0	11.01	3.86	5.22
39:4	C3		0	4	T3	2	Silt	Compact	0	9.34	3.07	0
60:1	C3	3/14/2005	2	3	T4/T5/T6	3	Silt	Compact	0	10.28	3.06	5.36
54:3	C3	3/24/2005	2	3	T5	3	Silt		0	12.6	4.06	5.5
51:5	C3	3/14/2005	3	3	T7/T8	3	Sand	Compact	10	7.68	2.39	4.27
69:5	C3	3/25/2005	0	3	T8	3	Silt	Compact	0	6.8	2.71	5.44
114:1	A2	3/24/2005	7	2	T5	3	Silt	Compact	0	27.7	8.56	10.8
53:4	C3	3/17/2005	22	4	T4	3	Silt	Compact	0	8.13	2.43	0
102:1	C2	3/17/2005	22	3	T5	3	Sand		0	9.26	2.93	4.95
102:2	A3	3/17/2005	22	3	T5	3	Silt	Compact	0	24.1	8.41	9.7
46:2	C3	3/25/2005	7	4	T6	3	Silt	Compact	0	8.85	2.69	5.15
79:1	A3	3/25/2005	0	3	T5	3	Silt	Compact	0	23.3	7.81	12.8
86:3	A3	3/25/2005	0	3	T7	3	Silt	Friable	0	25.5	7.4	0
76:1		3/25/2005	0	3	T7	3	Sand	Compact	0	11.2	3.68	5.4
48:5	C3		0	4	T3	3	Silt	Compact	0	8.96	2.34	6.39
73:6	A		11	3	T4	3			0	32.1	10.04	15.5
58:1	A3	3/15/2005	4	3	T6	3			0	25.6	8.93	11.5
80:1	A3	3/25/2005	0	3	T5/T6	4	Silt	Compact	0	26.3	6.5	11.2
104:2	C2	3/25/2005	0	2	T5	4			0	9	2.86	4.59
119:2	A2	3/15/2005	4	2	T7	5	Sand	Compact	5	27.4	7.99	12.3
110:1	B2	3/21/2005	11	2	T5	5			0	16.6	4.9	8.44
154:8	A	3/21/2005	11	1	T5	5	Silt		0	32.9	12.53	12.5
172:2	C1	3/14/2005	2	1	T5	5	Silt	Compact	0	9.89	3.57	4.83
110:7	C2		24	2	T5	5			0	9.12	3.25	4.06
138:4	A2	3/14/2005	12	2	T5	5	Sand	Friable	0	27.6	8.25	11.9
133:6	A2		12	2	T3	5	Silt	Compact	0	28.2	8.8	11.6

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Report Typ	Date	Shelf numb	Phase	Unit	Level	Paste Textu	Paste Densi	%Inclusions	Vessel Ht	Neck Ht	Neck Width
138:1	C2	3/25/2005	0	2	T5	5	Silt	Compact	0	8.4	3.13	4.29
95:4	C2	3/24/2005	7	2	T7	5	Silt	Compact	0	9.83	2.68	5.87
96:8	C2	3/17/2005	22	3	T7	5	Silt	Compact	5	8.27	2.61	4.82
111:2	C2	3/17/2005	22	2	T4/T6	5	Silt	Compact	5	11.24	3.33	6.13
144:1	C1	3/17/2005	22	2	T5	5	Sand	Compact	10	10.38	3.29	4.66
122:1	C2	3/17/2005	22	2	T3	5	Silt	Friable	0	12.49	4.03	6.61
154:2	C1	3/17/2005	22	1	T5	5	Silt	Compact	5	9.27	2.93	4.57
140:5	A1?	3/24/2005	7	2	T5	5	Silt	Compact	0	24.8	7.35	12.1
123:1	C2	3/24/2005	0	2	T3	5	Silt	Compact	0	8.5	3.03	4.79
103:2	C2	3/14/2005	1	2	T5	5	Silt	Compact	5	8.85	2.85	4.56
109:3	C2	3/14/2005	1	2	T3	5	Sand	Compact	10	10.63	3.51	5.15
98:1	C2	3/14/2005	2	2	T3	5	Sand	Compact	15	9.5	3.05	5.04
133:2	B2	3/25/2005	0	2	T3	5	Silt	Compact	0	16.8	5.79	10.3
144:2	A1	3/25/2005	0	2	T5	5	Sand	Friable	0	27	7.61	12.5
95:1	C2	3/21/2005	23	2	T7	5	Silt	Compact	0	8.74	3.1	4.28
137:3	A2	3/21/2005	23	2	T7	5	Silt	Compact	0	23.1	8	11.1
139:2	B2	3/15/2005	4	2	T6	5		Compact	0	20.5	7.1	9.8
154:3	A1	3/21/2005	23	1	T5	5	Silt	Compact	0	26.1	8.08	11.3
128:3	A2		0	2	T7	6			0	29.4	9.3	12.3
161:1	C1		24	1	T7	6			0	10.58	3.74	6.43
152:1	C1	3/25/2005	0	2	T5	6	Sand	Compact	0	9.8	3.73	4.79
160:1	C1	3/25/2005	0	1	T7	6	Silt	Compact	0	10.6	3.26	4.94
175:1	A1	3/25/2005	7	1	T5	6	Silt	Compact	0	20.9	6.14	11.4
171:3	A1	3/25/2005	7	1	T3/T5	6	Silt	Compact	0	24.4	8.61	10.6
184:1	B1	3/24/2005	7	1	T5	6	Silt	Compact	0	17.2	5.79	8.62
186:1	A	3/24/2005	7	1	T5	6	Silt	Compact	0	32.7	11.2	13.8
141:5	A	3/24/2005	0	2	T3	6	Silt	Compact	0	33.5	9.73	13.8
170:5	A1	3/24/2005	0	1	T5	6	Silt	Compact	0	29.1	9.3	12.8
135:8	A2	3/24/2005		2	T3	6	Silt	Compact	0	29	8.86	14.7
181:4	A1	3/24/2005	0	1	T5	6	Silt	Compact	0	28.7	9.03	12
130:4	B2	3/23/2005	18	2	T8	6	Silt	Compact	0	18.2	6.48	8.86
183:5	C1	3/23/2005	19	1	T5	6	Silt	Compact	0	10.43	3.77	5

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Report Typ	Date	Shelf numb	Phase	Unit	Level	Paste Textu	Paste Densi	%Inclusions	Vessel Ht	Neck Ht	Neck Width
170:1	C1	3/14/2005	1	1	T5	6	Silt	Compact	5	11.3	4.22	5.32
185:1	C1	3/14/2005	1	1	T5	6			0	9.59	3.73	4.69
183:4	B1	3/14/2005	1	1	T5	6			0	15.42	4.98	7.58
156:3	A1	3/14/2005	1	1	T3	6	Silt	Compact	0	28.7	9.23	13
162:2	A1	3/25/2006	0	1	T7	6	Silt	Compact	0	21.6	7.18	10.2
135:3	C2	3/25/2005	0	2	T3	6	Silt	Compact	0	9.2	3.12	4.78
129:3	A2		12	2	T7/T8	6	Silt	Compact	0	23.2	7.35	9.39
147:1	C1	3/21/2005	23	2	T5	6	Silt	Compact	0	9.76	3.21	4.74
141:3	Aa1	3/14/2005	2	2	T3	6	Silt	Compact	5	18.4	6.47	7.88
178:5	A1	3/14/2005	2	1	T5	6	Silt	Compact	5	20.6	7.86	10.57
179:1	A1		11	1	T3	6	Silt	Compact	0	23.8	6.8	10.7
128:1	C2	3/21/2005	11	2	T7	6	Silt	Compact	0	12.93	4.42	5.55
119:2	A2									27.4	8	9.78
133:1	A2									20.8	6.22	9.33

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Mouth diam	Max Diame	body ht	BaseWidth	Ht to max diamet	Rim Shape	Rim Thickn	Lip Shape	DecorLocatio	Collar#Col	Linelength
33:1	7.46	6.12	6.22	4.06	5.49	0	0.32	0	5	9	1.9
35:1	6.94	6.17	6.54	4.28	5.42	0	0.32	1	0	6	2.3
75:1	14.7	13	16.66	6.89	14.1	0	0.46	0	1	7	5
14:3	15.58	12.18	12.3	5.8	16.5	0	0.37	0	6	0	0
22:5	6.58	6.29	6.72	4.52	5.99	0	0.33	0	1	0	2.6
17:6	6.68	6.39	6.83	4.81	5.69	0	0.39	0	3	0	0
36:1	7.5	6.63	7.15	4.42	7.07	0	0.39	0	0	0	0
39:4	7.03	5.56	6.27	3.83	5.94	0	0.31	0	0	0	0
60:1	8.08	6.55	7.22	3.98	5.84	0	0.38	0	5	7	1.9
54:3	8.6	7.4	8.54	5.56	7.08	0	0.34	0	1	6	3
51:5	5.87	5.16	5.29	3.85	4.85	0	0.4	0	0	0	0
69:5	6.4	5.71	4.09	4.4	4.27	0	0.39	0	1	6	0
114:1	19.5	13.9	19.14	6.49	13.1	0	0.41	0	1	8	7.6
53:4	6.01	5.4	5.7	3.81	4.86	0	0.38	0	5	0	1.3
102:1	8.05	6.48	6.33	4.4	5.56	0	0.42	0	1	0	0
102:2	16.3	13.6	15.69	6.29	14.9	0	0.36	0	5	8	7.3
46:2	6.77	6.24	6.16	3.97	5.01	0	0.36	0	6	7	1.5
79:1	18.2	14.6	15.49	7.2	13	0	0.65	0	6	0	5.1
86:3	18.7	13.3	18.1	7	0	0	0.45	1	6	9	4.1
76:1	8	6.97	7.52	4.3	6.56	0	0.44	0	0	0	0
48:5	7.62	6.57	6.62	4.49	5.51	0	0.42	0	0	8	0
73:6	21.2	18.2	22.06	8.15	19	0	0.41	0	6	8	3.1
58:1	18.6	12.9	16.67	7.78	11.3	0	0.42	0	5	5	0
80:1	15.4	14.2	19.8	7.2	14	0	0.57	0	6	7	4.1
104:2	7.5	5.9	6.14	3.7	5.8	2	0.33	0	5	0	0
119:2	18.2	16	19.41	7.2	6.9	0	0.53	0	5	0	6.2
110:1	12.34	10.04	11.7	4.79	9.1	0	0.4	0	1	0	3.6
154:8	22.9	18.3	20.37	7.46	19.2	0	0.47	0	5	9	4.1
172:2	7.62	6.07	6.32	3.84	6.24	1	0.34	0	1	7	0
110:7	6.85	5.7	5.87	4.14	7.81	0	0.42	0	0	0	0
138:4	19.1	16	19.35	7.13	15	0	0.49	0	1	8	0
133:6	20.1	15.3	19.4	7.15	17.5	0	0.44	0	6	10	4.2

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Mouth diam	Max Diame	body ht	BaseWidth	Ht to max diamet	Rim Shape	Rim Thickn	Lip Shape	DecorLocatio	Collar#Col	Linelength
138:1	7.2	5.62	5.27	3.7	5.47	0	0.35	0	1	8	1.3
95:4	7.04	7.06	7.15	4.74	4.55	0	0.49	0	0	0	0
96:8	6.58	5.94	5.66	4.26	5.19	0	0.48	0	1	6	1.7
111:2	8.58	7.38	7.91	4.58	7.02	0	0.43	0	1	6	0
144:1	7.35	6.33	7.09	3.58	5.53	0	0.35	0	4	7	2.7
122:1	9.87	7.6	8.46	4.34	6.71	0	0.42	0	1	0	0
154:2	7.39	6.18	6.34	4.18	5.5	0	0.33	0	1	7	1.8
140:5	18.5	27.6	17.45	7.7	15.3	0	0.35	0	4	7	3.1
123:1	7.28	5.63	5.47	4.39	5.08	0	0.38	0	1	7	0
103:2	6.64	5.72	6	4.43	5.18	0	0.41	1	1	6	0
109:3	7.88	6.64	7.12	4.3	6.08	0	0.34	0	1	6	0
98:1	6.7	6.23	6.45	3.61	6.01	0	0.35	0	1	7	1.4
133:2	13	8.3	11.01	6.8	9	0	0.45	1	5	9	1.8
144:2	19.3	16.8	19.39	7.5	18.8	0	0.48	0	1	7	0
95:1	6.13	5.6	5.64	3.97	5.48	0	0.33	0	0	0	0
137:3	18.4	14.3	15.1	6	13.3	0	0.41	0	5	8	5.1
139:2	15.8	13.1	13.4	7.21	11.3	0	0.43	0	1	8	4.3
154:3	17.7	15.2	18.02	6.91	13.9	0	0.39	0	6	9	4.1
128:3	21.9	17.2	20.1	8.5	18.8	0	0.45	0	6	11	3.8
161:1	8.88	7.55	6.84	4.14	6.5	0	0.36	0	4	7	2.9
152:1	8	6.42	6.07	4.3	6.33	0	0.39	0	1	6	2.1
160:1	7.5	6.18	7.34	3.4	6	0	0.33	0	1	9	1.1
175:1	16.4	15.2	14.76	6.74	10.3	2	0.4	1	0	0	0
171:3	16.4	13.9	15.79	6.76	13.4	0	0.46	0	6	6	4.1
184:1	13.13	12.73	11.41	6.85	8.8	0	0.39	0	1	7	4
186:1	23.8	18.5	21.5	8.49	21.3	0	0.56	0	6	8	4.9
141:5	22.1	18.9	23.77	0	17.7	0	0.61	0	6	0	3.8
170:5	21.4	17.4	19.8	8.02	15.7	0	0.55	0	6	0	4.8
135:8	22.1	16.4	20.14	7.25	15.2	0	0.43	0	6	0	6.5
181:4	19.7	15.7	19.67	6.92	18.5	0	0.46	0	6	10	4.2
130:4	13.06	11.56	11.72	7.28	11.2	0	0.51	0	5	11	0
183:5	8.04	6.17	6.66	4.52	6.58	0	0.29	0	1	7	3.1

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Mouth diam	Max Diame	body ht	BaseWidth	Ht to max diamet	Rim Shape	Rim Thickn	Lip Shape	DecorLocatio	Collar#Col	Linelength
170:1	9.15	6.72	7.08	4.18	6.39	0	0.46	0	5	0	1.9
185:1	7.33	5.91	5.86	3.6	6.01	0	0.26	0	1	6	0
183:4	12.48	9.52	10.44	5.63	7.84	0	0.35	0	5	6	0
156:3	19.2	17.5	19.47	7.64	15.48	0	0.34	0	5	9	0
162:2	16	13.4	14.42	6.2	11.7	0	0.45	0	6	9	4
135:3	6.9	5.66	6.08	3.9	5.42	0	0.33	0	1	11	1.1
129:3	15.89	12.69	15.85	6.91	13.7	2	0.45	0	6	9	3.2
147:1	7.17	6.01	6.55	3.73	5.78	0	0.35	0	4	7	1.9
141:3	13.58	10.58	11.93	6.64	11.39	0	0.42	0	1	7	3.4
178:5	15.77	12.97	12.74	6.89	12.26	0	0.38	0	1	12	2
179:1	7.3	14.8	17	7.27	14.5	0	0.35	0	4	12	1.6
128:1	8.87	7.59	8.51	4.56	7.82	0	0.26	0	1	7	2.8
119:2	18.4	13.6	19.4	6	13.78						
133:1	15.4	12.6	14.58	7.56	12.44						

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Linewidth	Neck eleme	#rows_neck	incision_wi	#shoulder bands	#rows/band	#elements	Shoulder el	ElementOrg	Incision_wi	Obj_wid
33:1	0.11	0	0	0	1	4	2	10	2	0.15	0.15
35:1	0.1	0	0	0	0	0	0	0	0	0	0
75:1	0.21	0	0	0	0	0	0	0	0	0	0
14:3	0	2	3	0.11	1	3	1	1	1	0.12	0
22:5	0.18	0	0	0	0	0	0	0	0	0	0
17:6	0	0	0	0	1	1	2	0	1	0	0
36:1	0	0	0	0	0	0	0	0	0	0	0
39:4	0	0	0	0	0	0	0	0	0	0	0
60:1	0.2	0	0	0	2	3	2	10	1	0.1	0.1
54:3	0.3	0	0	0	0	0	0	0	0	0	0
51:5	0	0	0	0	0	0	0	0	0	0	0
69:5	0	0	0	0	0	0	0	0	0	0	0
114:1	0.3	0	0	0	0	0	0	0	0	0	0
53:4	0.1	0	0	0	1	2	1	2	1	0.1	0
102:1	0	0	0	0	0	0	0	0	0	0	0
102:2	0.3	0	0	0	2	1	2	10	1	0	0
46:2	0.11	2	2	0.1	1	1	1	1	1	0.11	0
79:1	0.3	8	2	0.15	1	1	1	1	1	0	0.15
86:3	0.3	2	3	0.2	1	1	1	1	1	0	0
76:1	0	0	0	0	0	0	0	0	0	0	0
48:5	0	0	0	0	0	0	0	0	0	0	0
73:6	0.11	8	2	0.2	2	2	2	10	1	0.15	0
58:1	0.3	0	0	0	1	1	1	2	1	0.35	0
80:1	0.2	8	2	0.1	1	2	1	1	1	0.08	0
104:2	0	2	2	0.2	0	2	1	0	1	0	0
119:2	0.5	0	0	0	2	2	2	12	1	0.15	0.15
110:1	0.15	0	0	0	0	0	0	0	0	0	0
154:8	0.2	0	0	0	2	3	2	11	1	0.1	0.1
172:2	0.2	0	0	0	0	0	0	0	0	0	0
110:7	0	0	0	0	0	0	0	0	0	0	0
138:4	0	0	0	0	0	0	0	0	0	0	0
133:6	0.2	9	1	0.1	1	2	1	1	1	0.08	0

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Linewidth	Neck eleme	#rows_neck	incision_wi	#shoulder bands	#rows/band	#elements	Shoulder el	ElementOrg	Incision_wi	Obj_wid
138:1	0.1	0	0	0	0	0	0	0	0	0	0
95:4	0	0	0	0	0	0	0	0	0	0	0
96:8	0.11	0	0	0	0	0	0	0	0	0	0
111:2	0	0	0	0	0	0	0	0	0	0	0
144:1	0.15	9	1	0.1	0	0	0	0	0	0	0
122:1	0	0	0	0	0	0	0	0	0	0	0
154:2	0.11	0	0	0	0	0	0	0	0	0	0
140:5	0.15	13	1	0.15	0	0	0	0	2	0	0
123:1	0	0	0	0	0	0	0	0	0	0	0
103:2	0	0	0	0	0	0	0	0	0	0	0
109:3	0	0	0	0	0	0	0	0	0	0	0
98:1	0.2	0	0	0	0	0	0	0	0	0	0
133:2	0.11	0	0	0	1	4	2	10	2	0.1	0
144:2	0	0	0	0	0	0	0	0	0	0	0
95:1	0	0	0	0	0	0	0	0	0	0	0
137:3	0.25	0	0	0	2	3	2	10	1	0.12	0.12
139:2	0.4	0	0	0	0	0	0	0	0	0	0
154:3	0.3	5	2	0.2	1	2	1	1	1	0.15	0
128:3	0.2	9	1	0.1	1	2	1	2	1	0	0.1
161:1	0.1	1	2	0	0	0	0	0	0	0	0
152:1	0.1	0	0	0	0	0	0	0	0	0	0
160:1	0.15	0	0	0	0	0	0	0	0	0	0
175:1	0	0	0	0	0	0	0	0	0	0	0
171:3	0.2	14	2	0.2	1	4	2	14	2	0.1	0.2
184:1	0.11	0	0	0	0	0	0	0	0	0	0
186:1	0.25	5	2	0.6	1	2	1	1	1	0.2	0
141:5	0.21	15	2	0.25	1	4	2	15	2	0.11	0.3
170:5	0.15	4	2	0.35	1	2	2	10	1	0.2	0
135:8	0.35	5	1	0.5	1	2	1	2	1	0	0.15
181:4	0.35	9	1	0.1	1	2	1	2	1	0	0.11
130:4	0	0	0	0	1	2	1	8	1	0	0
183:5	0.2	0	0	0	0	0	0	0	0	0	0

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Linewidth	Neck eleme	#rows_neck	incision_wi	#shoulder bands	#rows/band	#elements	Shoulder el	ElementOrg	Incision_wi	Obj_wid
170:1	0.2	0	0	0	1	2	1	2	1	0	0.3
185:1	0	0	0	0	0	0	0	0	0	0	0
183:4	0	0	0	0	2	2	2	16	1	0.1	0
156:3	0	0	0	0	1	4	1	1	1	0.2	0
162:2	0.25	9	1	0.15	1	1	1	1	1	0.2	0
135:3	0.1	0	0	0	0	0	0	0	0	0	0
129:3	0.25	8	2	0.1	1	1	1	1	1	0.11	0
147:1	0.1	9	1	0.11	0	0	0	0	0	0	0
141:3	0.3	0	0	0	0	0	0	0	0	0	0
178:5	0.15	0	0	0	0	0	0	0	0	0	0
179:1	0.1	12	3	0.1	0	0	0	0	0	0	0
128:1	0.4	0	0	0	0	0	0	0	0	0	0
119:2											
133:1											

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Sum bands	Sumrows	Totalelemer	Composite (	Ruding	Loop Handl	Length of ru	Width of ru	Comments		
33:1	1	4	2	L/W	0	0	0	0			
35:1	0	0	0		3	0	0.91	0.54			
75:1	0	0	0		0	0	0	0			
14:3	2	6	2	W/L	3	0	2.38	0.64			
22:5	0	0	0		0	0	0	0			
17:6	0	0	0		0	0	0	0	Small guan with decoration		
36:1	0	0	0		0	0	0	0			
39:4	0	0	0		0	0	0	0			
60:1	2	3	2	W/L	3	0	2.14	1.17			
54:3	0	0	0		0	0	0	0			
51:5	0	0	0		0	0	0	0			
69:5	0	0	0		0	0	0	0			
114:1	0	0	0		0	0	0	0			
53:4	0	0	0		1	0	1.67	0.85			
102:1	0	0	0		0	0	0	0			
102:2	0	0	0		1	0	1.68	0.99			
46:2	2	3	2	W/L	0	0	0	0			
79:1	2	3	2	S/W	0	0	0	0			
86:3	2	4	2	W/L	2	0	2.3	0.87			
76:1	0	0	0		0	0	0	0			
48:5	0	0	0		0	0	0	0			
73:6	3	5	3	S/W/L	0	0	0	0			
58:1	0	0	0		1	0	1.11	1.61			
80:1	2	4	2	S/L	0	0	0	0			
104:2	1	2	1	W	3	0	1.3	0.54			
119:2	2	2	2	Rs/L	2	0	2.09	0.7			
110:1	0	0	0		1	0	1.81	0.84			
154:8	2	3	2	S/L	1	0	2.06	1.27			
172:2	0	0	0		0	0	0	0			
110:7	0	0	0		2	0	1.77	0.78			
138:4	0	0	0		0	0	0	0			
133:6	2	3	2	Rs/L	2	0	2.02	0.7			

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Sum bands	Sumrows	Totalelemen	Composite	Ruding	Loop Handl	Length of r	Width of ru	Comments		
138:1	0	0	0		3	0	1.21	0.64			
95:4	0	0	0		1	0	1.37	0.84			
96:8	0	0	0		1	0	1.22	0.45			
111:2	0	0	0		1	0	1.49	0.49			
144:1	1	1	1	Rs	2	0	1.06	0.72			
122:1	0	0	0		1	0	0.97	0.61			
154:2	0	0	0		2	0	0.87	0.66			
140:5	1	3	2	T/L	3	0	1.87	1.27			
123:1	0	0	0		0	0	0	0			
103:2	0	0	0		1	0	1.44	0.62			
109:3	0	0	0		2	0	1.62	0.58			
98:1	0	0	0		0	0	0	0			
133:2	0	0	0		1	0	1.83	0.64	Basket impression on base		
144:2	0	0	0		2	0	2.65	0.59	Grid on base		
95:1	0	0	0		2		1.3	0.79			
137:3	2	5	2	W/L	3	0	1.65	0.8			
139:2	0	0	0		0	0	0	0	Basket impression on base		
154:3	2	3	2	He/L	1	0	0	0			
128:3	2	3	2	Rs/W	2	0	2.57	1.53			
161:1	1	2	1	L	0	0	0	0			
152:1	0	0	0		3	0	1.85	0.62			
160:1	0	0	0		0	0	0	0			
175:1	0	0	0		0	0	0	0			
171:3	2	5	2	P/L	3	0	2.09	0.87			
184:1	0	0	0		1	0	2.27	0.95			
186:1	2	4	2	L/He	2	0	2.83	1.12			
141:5	3	6	2	Ve/L	3	0	2.49	1.03			
170:5	3	4	3	Ve/W/L	3	0	2.1	0.93			
135:8	2	3	2	He/W	0	2	3.22	0.92			
181:4	2	3	2	RS/W	1	0	2.92	0.94			
130:4	1	2	1	S	0	0	0	0			
183:5	0	0	0		0	0	0	0			

Appendix 25: Hengdalu Flared Mouth Jar

Vessel #	Sum bands	Sumrows	Totalelemer	Composite	Ruding	Loop Handl	Length of ru	Width of ru	Comments		
170:1	1	2	1	W	2	0	1.94	0.8			
185:1	0	0	0		2	0	1.25	0.53			
183:4	2	4	2	L/He	2	0	2.45	0.67			
156:3	1	4	1	1	3	0	1.11	1.2	plate 141.3		
162:2	2	2	2	Rs/L	3	0	2.2	0.79			
135:3	0	0	0		2	0	1.06	0.49			
129:3	2	3	2	S/L	0	0	0	0	2 net incision		
147:1	1	1	1	Rs	2	0	1.03	0.81			
141:3	0	0	0		0	0	0	0	Base basket impression		
178:5	0	0	0		0	0	0	0			
179:1	1	3	2	Rs/L	0	0	0	0			
128:1	0	0	0		3	0	1.84	0.62			
119:2											
133:1											

BIBLIOGRAPHY

Abu Lughod, Janet
1989 Before European Hegemony: the World System A.D. 1250-1350. New York: Oxford University Press.

Alcock, Sue
2001 The Reconfiguration of Memory in the Eastern Roman Empire. In Empires: Perspectives from Archaeology and History. S.e.a. Alcock, ed. Pp. 323-50. Cambridge: Cambridge University Press.

2005 Roman Colonies in the Eastern Empire: A Tale of Four Cities. In Archaeology of Colonial Encounters. G. Stein, ed. Santa Fe: SAR Press.

Algaze, Guillermo
1993 The Uruk World System: The Dynamics of Expansion of Early Mesopotamian Civilization. Chicago: University of Chicago Press.

Allard, Francis
1998 Stirrings at the Periphery: History, Archaeology, and the Study of the Dian. International Journal of Historical Archaeology 2(4):321-41.

2005 Frontiers and Boundaries: The Han Empire from its Southern Periphery. In Archaeology of Asia, M. Stark (ed). pp. 233-254. Malden: Blackwell Publishers

Archaeological work team of the Guizhou provincial museum 贵州省博物馆考古组 (Guizhou sheng bowuguan kaogu zu)
1981 Weining Zhongshui Han mu 威宁中水汉墓(Han period burial in Zhongshui, Weining Prefecture). Kaogu Xuebao (2):217-244.

Bagley, Robert
1999 Shang Archaeology. In Cambrige History of Ancient China. M. Loewe and E. Shaughnessy (eds.). pp. 124-231. Cambridge: Cambridge University Press.

Barnes, Gina
1999 China, Korea, and Japan: the rise of civilization in East Asia. London: Thames and Hudson.

Barth, Frederick
1969 Introduction. In Ethnic Groups and Boundaries: The Social Organization of Culture Difference. F. Barth, ed. Pp. 1-38. Boston: Little, Brown.

Bhabha, Homi
1994 The Location of Culture. London: Routledge.

Binford, Lewis
1971 Mortuary practices: their study and their potential. In Approaches to the social dimensions of mortuary practices. J. Brown, ed. Pp. 6-29, Vol. 25: Society of American Archaeology.

Brashier, K.E.
1995 Longevity like Metal and Stone. The Role of the Mirror in Han Burials. T'uong Pao 81(4-5):201-229.

Brindley, Erica
2003 Barbarians or not? Ethnicity and Changing Conceptions of the Ancient Yue (Viet) Peoples (~400-50 B.C.). Asia Major 16(1):1-32.

Brown, James
1971 The dimensions of status in the burials at Spiro. In Approaches to the Social Dimensions for Mortuary Practices. J.A. Brown, ed. Memoirs of the Society for American Archaeology 25. New York: Society for American Archaeology.

Brown, Miranda
2002 Did the Ancient Chinese Attempt to Preserve Corpses? A Reconsideration of the Elite Conceptions of Death. Journal of East Asian Archaeology 4(1-4):201-223.

2007 The Politics of Mourning in Early China. Buffalo: State University of New York Press.

Bunker, E. and J. So.
1995 Traders and Raiders on China's Northern Frontier. Washington, D.C.: Smithsonian Institution.

Cannon, Aubrey
1989 The historical dimensions in mortuary expressions of status and sentiment. Current Anthropology 30:437-458.

Central Intelligence Agency
1973 People's Republic of China Map 1:4,600,000. Washington D.C.

Cao, Yincai 曹吟蔡
1965 Yunnan Zhaotong xian bainijing faxian dong Han mu 云南昭通县白泥井发现东汉墓 (An Eastern Han burial in Bainijing, Zhaotong County). Kaogu (2):98-99.

Chen, Taimin 陈泰敏
2003 Tonghai Yangshan beiqiu yizhi 通海杨山贝丘遗址(The Yangshan shell midden site in Tonghai). Yunnan Wenwu 57(1):2-11.

Chen, Zuo 陈苗

2006 450 zuo muzang yinzheng sangzang xisu 450 座墓葬印证丧葬习俗 (450 burials verify the mourning customs of the funerary ritual). In Henan Ribao.

Chinese Academy of Social Sciences, Zhongguo Kexue yuan kaogu yanjiu suo Luoyang gongzuo dui 中国科学院考古研究洛阳工作队 (CASS)

1972 Donghan Luoyang cheng nanjiao de xingtu mudi 东汉洛阳城南郊的刑徒墓地. (Xingtu cemetery of the Eastern Han, Luoyang city) Kaogu (4):2-19.

Chiou-Peng, Tze-huey

2004 Horsemen in the Dian Culture of Yunnan. In Gender and Chinese Archaeology. K. Linduff and S. Yan, eds. Pp. 289-314. Walnut Creek: Altamira Press.

Cook, Constance

2006 Death in Ancient China: The Tale of One Man's Journey. Leiden: Brill.

Crespigny, Rafe de

1990 Generals of the South: the foundation and early history of the Three Kingdoms state of Wu. Canberra: Australian National University.

Cusick, J.G., ed.

1998 Studies in Culture Contact: Interaction, Culture Change, and Archaeology. Carbondale: Center for Archaeological Investigations, SIU.

Dali Prefecture Cultural Management Office 大理州文物管理所 (Dali zhou wenwu guanli suo)

1997 Yunnan Dali shi xiaguan cheng bei dong Han jinian mu. 云南大理市下关城北东汉纪念墓 Kaogu (4):63-75.

1988 Yunnan Dali dazhantun erhao han mu 云南大理大展屯二号汉墓(Number 2 Han burial from Dazhan tun, Dali, Yunnan). Kaogu (5):449-456.

Davies, H. R.

1909 Yunnan, The Link between India and Yangzi. Cambridge: Cambridge University Press.

Dawdy, Shannon

2000 Understanding cultural change through the vernacular: Creolization in Louisiana. Historical Archaeology (34):107-23.

Deagan, Kathleen

1983 Spanish St. Augustine: The Archaeology of a Colonial Creole Community. New York: Academic Press.

Di Cosmo, Nicola

2004 Ancient China and its Enemies: The Rise of Nomadic Power in East Asian History. Cambridge: Cambridge University Press.

Dietler, Michael

1998 Consumption, Agency, and Cultural Entanglement: Theoretical Implications of a Mediterranean Colonial Encounter. In Studies in Culture Contact: Interaction, Culture Change, and Archaeology. J.G. Cusick, ed. Pp. 288-315. Carbondale: Center for Archaeological Investigations, SIU.

2005 The Archaeology of Colonization and the Colonization of Archaeology: Theoretical Challenges from an Ancient Mediterranean Colonial Encounter. In Archaeology of Colonial Encounters. G. Stein, ed. Santa Fe: SAR Press.

Dommelen, P. v.

2005 Colonial Interactions and Hybrid Practices: Phoenician and Carthaginian Settlement in the Ancient Mediterranean. In Archaeology of Colonial Encounters. G. Stein, ed. Santa Fe: SAR Press.

Edens, Christopher

1992 Dynamics of Trade in the Ancient Mesopotamian "World System" American Anthropologist 94(1):118-139

Eiselt, S.

2006 The emergency of Jicarilla Apache enclave economy during the 19th century in Northern New Mexico, University of Michigan.

Erickson, Susan

1997 Delicate and lovely. . . . unique and strange:' Art of Sichuan Province, second century b.c.e to third century c.e. Orienations 28(8):78-84.

Falkenhausen, L.v.

2002 The use and sigificance of ritual bronzes in the Lingnan Region during the Eastern Zhou period. Journal of East Asian Archaeology.

2004 Mortuary behavior in Pre-Imperial Qin: A Religious Interpretation. In Religion and Chinese Society. J. Lagerwey, ed. Pp. 109-172, Vol. 1. Hong Kong: Chinese University of Hong Kong Press.

Fan, Lijun 范利军

1989 Qujing shi wenwu zhi 曲靖市文物志(Cultural Relics of Qujing City). Kunming: Yunnan minzu chuban she.

Fang, Guoyu 方国瑜
1987 Zhongguo Xinan Lishi Dili Kaoshi 中国西南历史地理考释(A Study of the Historical Geography of Southwestern China). 2 vols. Volume 1. Beijing: Zhonghua Shu Ju.

Fei, Xiaotong
1975 Earthbound China: a study of rural economy in Yunnan. Chicago: University of Chicago Press.

Ferguson, L.
1992 Uncommon Ground. Washington, D.C.: Smithsonian Institute Press.

Fiskesjö, Magnus
1999 On the 'Raw' and 'Cooked' Barbarians of Imperial China. Inner Asia 1(2):141-167.

Foster, George M.
1960 Culture and Conquest: America's Spanish Heritage. Chicago: Quadrangle Books.

Foucault, Michel
1979 Discipline and Punishment. The Birth of the Prison. Harmondsworth: Peregrine.

Frank, A. G.
1993 Bronze Age World System Cycles. Current Anthropology (34):383-429.

Goldstein, Lynn
1981 One-dimensional people: spatial organization and mortuary analysis. In The Archaeology of Death. I.K. R. Chapman, K. Randsborg, ed. Pp. 53-69. Cambridge: Cambridge University Press.

Goodenough, W.H.
1965 Rethinking 'status' and 'role': toward a general model of the cultural organization of social relationships. In The Relevance of Models for Social Anthropology. M. Banton, ed. London: Tavistock.

Guangxi Zhuang Autonomous Region Archaeology and Cultural Relics Workgroup (Guangxi Zhuangzu zizhi qu wenwu kaogu xiezuo xiaozu) 广西状族自治区文物考古协作校组
1972 Guangxi hepu xi Han muguo mu 广西河濮西汉墓郭墓(Double coffin Western Han period burial, Hepu, Guangxi). Kaogu (5):20-30.

Guizhou Provincial Institute of Cultural Relics and Archaeology 贵州省文物考古研究所 (Guizhou sheng wenwu kaogu yanjiu suo)

2006 Report on the 2004 excavations at Jigongshan site in Weining Prefecture, Guizhou. 贵州威宁县鸡公山遗址 2004 年发掘简报(Guizhou Weining xian Jigong shan yizhi 2004 nian fajue jianbao). Kaogu 8:11-27.

2006 Report on the excavations at the Shang-Zhou period site of Wujiadaping in Weining, Guizhou. 贵州威宁县吴家大坪商周遗址(Guizhou Weining xian Wujiadaping Shangzhou yizhi). Kaogu 8:28-39.

Hammond, R. And P.S. McCullagh

1978 Quantitative Techniques in Geography. Oxford: Clarendon Press.

Hannerz, Ulf

1987 The world in creolization. Africa (57):546-59.

Hodder, Ian

1980 Social structure and cemeteries: a critical appraisal. In Anglo-Saxon Cemeteries. T. Watts, ed. Pp. 161-170, Vol. 82. Oxford: BAR.

1984 Burials, houses, women and men in the European Neolithic. In Ideology, Power and Prehistory. C. Tilley, ed. Pp. 51-68. Cambridge: Cambridge University Press.

Holcombe, Charles

2001 Genesis of East Asia, 221 BC - AD 907. Honolulu: University of Hawaii Press.

Honeychurch, W. and C. Amartuvshin

2005 States on Horseback: The Rise of Inner Asian Confederations and Empires. In Archaeology of Asia, M. Stark (ed). pp. 255-278.

Hong Kong Museum of History 香港历史博物馆

2005 Lielu yu piaoniu 躐鹿与剽牛. Hong Kong: Hong Kong Museum of History.

Hsu, Cho yun

1980 Han Agriculture: The Formation of Early Chinese Agrarian Economy (206 B.C.-A.D. 220). J. Dull, ed. Seattle and London: University of Washington Press.

Huan, K'uan

1931 Discourse on salt and iron: a debate on state control of commerce and industry in ancient China, chapters I-XIX. E. Gale, transl. Leiden: Brill.

Huang, Zhanyue 黄展岳

1998 Handai Zhuhou Wang Mu Lunxun 汉代诸侯王墓轮训. Kaogu Xuebao (1):11-34.

Indrisano, Gregory

2006 Subsistence, Environment Fluctuation and Social Change: A Case Study in South Central Inner Mongolia., University of Pittsburgh.

Jiang, Ruoshi 蒋若是

1997 Qin Han qianbi yanjiu 秦汉钱币研究(Research on Qin Han period coinage). Beijing: Zhonghua shu ju.

Jiang, Zhilong 蒋志龙

2002 Dianguo tanmi 滇国探密(Mystery of the Dian Kingdom). Kunming: Yunnan Jiaoyu Chubanshe.

Joffee, Alexander

2002 The Rise of Secondary States in the Levant. Journal of Economic and Social History of the Orient 45(4):425-467

Jones, Sian

1997 The Archaeology of Ethnicity. London and New York: Routledge.

Junker, L. and K. Morrison

2002 Forager-traders in South and Southeast Asia: Long-term Histories. Cambridge: Cambridge University Press.

Kleeman, Terry

1998 Great Perfection: Religion and Ethnicity in a Chinese Millenial Kingdom. Honolulu: University of Hawaii Press.

Kohl, Phillip

1987 The Use and Abuse of World Systems Theory: The case for pristine West Asian states. Advances in Archaeological Method and Theory 11:1-35.

1978 The Balance of Trade in Southwest Asia in the Mid-IIrd millennium BC. Current Anthropology 19:463-482.

Kristiansen, K.

1998 Europe Before History. Cambridge: Cambridge University Press.

Lai, Guo-long

2005 Death and Otherwordly Jouney in Early China as Seen through Tomb Texts, Travel Paraphernalia, and Road Rituals. Asia Minor 18(1):1-44.

Lai, Ming-chiu

1999 The Local Bureaucratic Structure of Han Dynasty: The Relationships between the Duties of Jun gongcao and the Wooden Documents Excavated at Yinwan [in chinese]. Zhongguo wenhua yanjiu suo xuebao (Journal of Chinese Studies) (8):35-72.

Lee, Yun-kuen

1996 Material representations of status in the Dian culture. Indo-Pacific Prehistory Association, 1996. Vol. 15, pp. 216-225.

2002 Status, Symbol, and Meaning in the Dian Culture. Journal of East Asian Archaeology 3(1-2):103-132.

Levy, J.

1989 Archaeological erspectives on death ritual: thoughts from N.W. Europe. Anthropological Quarterly 62:155-162.

Li, X. and D. Walker

1986 Late Pleistocene-Early Holocene Vegetational and Climatic Changes In Yunnan Province, Southwest China. Journal of Biogeography 13(5):477-486.

Li, Qiongfen 李琼芬

1998 Yunnan kaogu ceding niandai shuju ji 云南考古测定年代数据集(A compilation of radiocarbon dates from Yunnan). In Yunnan kaogu wenji (Collected Works on Yunnan Cultural Relics and Archaeology). Yunnan Provincial Institute of Cultural Relics and Archaeology (ed.) Pp. 459-465. Kunming: Yunnan minzu chuban she.

Li, X. & D. Walker

1986 The plant geography of Yunnan Province, southwest China. Journal of Biogeography 13:367-397.

Liang, Xiaoqiang 梁晓强

2004 Dui Qujing Batatai gu muqun di 69 hao mu de wenhua jieshi 对曲靖八塔台古墓群第 69 号墓的文化解读(Regarding an explanation of the cultural orientation of grave 69 at Batatai). Yunnan Wenwu (1):31-36.

Lightfoot, K. G. and A. Martinez

1995 Culture Contact Studies: Redefining the Relationship between Historic and Prehistoric Archaeology. American Antiquity 60(2):199-217.

2005 The Archaeology of Colonization: California in Cross-Cultural Perspective. In Archaeology of Colonial Encounters. G. Stein, ed. Santa Fe: SAR Press.

Linduff, K. and Y. Sun

2004 Gender and Chinese Archaeology. Walnut Creek: Altamira Press.

Linton, R.

1940 Acculturation in the seven American Indian Tribes. New York: Appleton, Century, Crofts.

Litzinger, R.
2000 Other Chinas: The Yao and the Politics of National Belonging. Durham: Duke University Press.

Lu, Tracey L. D.
1999 The Transition from Foraging to Farming and the Origin of Agriculture in China. Oxford: BAR.

McHugh, Feldore
1999 Theoretical and Quantitative Approaches to the Study of Mortuary Ritual. Oxford: Archaeopress.

Mintz, S and R. Price
1976 The Birth of African American Culture. Boston: Beacon Press.

Murowchick, Robert
1988 The Ancient Bronze Metallurgy of Yunnan and Its Environs, Harvard.

2002 The Political and Ritual Significance of Bronze Production and Use in Ancient China. Journal of East Asian Archaeology 3(1-2):133-92.

National Cultural Relics Bureau of China 国家文物局 (Guojia Wenwu ju)
2001 Zhongguo Wenwu Ditu ji Yunnan Fence 中国云南地图集分册 (National Cultural Relics Atlas: Yunnan Province). Kunming: Yunnan Keji Chuban she.

National museum of history (国立历史博物馆)
1998 Xihan Nanyue wang mu wenwu tezhan 西汉南越王墓文物特展 (Artifacts in the Nanyue King's tomb of Western Han Dynasty). Beijing: Guoli lishi bowuguan (National museum of history).

O'Shea, John
1984 Mortuary variability: An archaeological investigation. Florida: Academic Press.

1996 Village of the Maros. New York: Plenum Press.

O'Shea, John and Zvelebil, M
1984 Oleneostrovski moglinik: reconstructing the social and economic organization of prehistoric foragers in N. Russia. Journal of Anthropological Archaeology 3:1-40.

Pai, Hyung Il
1992 Culture contact and culture change: the Korean peninsula and its relations with the Han Dynasty commandery of Lelang. World Archaeology 23(2):306-19.

Palmié, Stephane
2006 Creolization and Its Discontents. Annual Review of Anthropology 35:433-56.

Pantilov, D.V.
1986 Southwest China and Yunnan Region. In Physical Geography of China. U.A.o.S. Institute of Geography, ed. Pp. 174-192, Vol. 2. New York: Praeger.

Parker-Pearson, M.
1999 The Archaeology of Death and Burial. College Station: Texas A & M.

Peebles, Christopher and S. Kus
1977 Some archaeological correlates of ranked societies. American Antiquity 42:421-448.

Peng, Shulin 彭书琳 and Zhang Wenguang 张文光
1988 Guixian Luobowan Xihan mu xunzang rengu 贵县罗播弯西汉墓殉葬人骨 (The sacrificial human remains from the Luobowan Western Han Burial in Guixian). In Guangxi Guixian Luobowan Hanmu 广西贵县罗播弯汉墓(Luobowan Han period burial, Guixian, Guangxi), Guangxi Zhuangzhu zizhi qu bowuguan 广西状族自治区博物馆(Museum of the Guangzi Zhuang Minority Autonomous Region). Beijing: Wenwu chuban she.

Peters, Heather
2002 Ethnicity along China's Southwestern Border. Journal of East Asian Archaeology 3(1-2):75-102.

Pirazolli-t'Serstevens, Michele, ed.
1992 Cowrie and Chinese Copper Cash as Prestige Goods in Dian. Hull: Center for Southeast Asian Studies, University of Hull.

Pirazolli-t'Serstevens, Michele
1996-97 A Reassessment of the Dating of Two Important Cemeteries of the Tien Culture. In Ancient Chinese and Southeast Asian Bronze Age Cultures. F.D. Bulbeck, ed. Pp. 273-88, Vol. 1. Taipei: SMC Publishing.

Pulleybank, E.
1981 Han China in Central Asia. International History Review 3:278-96.

Qilin People's Government
http://www.ql.gov.cn/qlfm/lsww/200706041708-1.jsp
http://www.ql.gov.cn/qlfm/lsww/20051102112-1.jsp
http://www.ql.gov.cn/qlfm/lsww/20051102111-1.jsp

Qiu, Ming 丘明
1993 Shilun wagu yu washi 试论蛙鼓与蛙饰(A discussion on frog drums and frog motif). In Tonggu he qingtong wenhua de xin tansuo 铜鼓和青铜文化的新探索 (Discussion on bronze drum and bronze cultures). Pp. 130-35. Nanning: Guangxi Mingzu chuban she (Guangxi People's Press).

Rawson, Jessica
1983 Chinese bronzes of Yunnan. London: Sidgwich and Jackson.

Redfield, R. et al.
1936 Memorandum for the Study of Acculturation. American Anthropologist 38:149-52.

Reimer, PJ et al.
2004 IntCal04 terrestrial radiocarbon age calibration, 0-26 cal kyr BP, Radiocarbon 46 (3): 1029-1058

Renfrew, C. and J. Cherry
1987 Peer polity interaction and socio-political change. Cambridge: Cambridge University Press.

Robb, John
1998 Archaeology of Symbols. Annual Review of Anthropology 27:329-346.

Rocher, Emile
1879-80 La province chinoise du Yun-nan. Paris: E. Leroux.

Rock, Joseph
1948 The ancient Na-khi kingdom of Southwest China. Cambridge: Harvard University Press.

Rode, Penny
1999 Textile Production, Gender and Social Status in Bronze Age Chinese Art Dissertation: "Social Position of Dian Women: Evidence from Art and Archaeology", University of Pittsburgh.

2004 Textile Production and Female Status in Bronze Age Yunnan. In Gender and Chinese Archaeology. K.a.Y.S. Linduff, ed. Pp. 315-337. Walnut Creek: Altamira Press.

Rogers, J.D.
1990 Objects of Change. Washington, D.C.: Smithsonian Institution.

2005 Archaeology and the Interpretation of Colonial Encounters. In Archaeology of Colonial Encounters. G. Stein, ed. pp. 331-354. Sante Fe: SAR Press.

Rogers, J.D. and S.M. Wilson
1993 Ethnohistory and Archaeology: Approaches to Post contact Change in the Americas. New York: Plenum Press.
Rowlands, M. et al
1987. Centre and Periphery in the Ancient World. Cambridge: Cambridge University Press.

Roymans, Nico
1996 The sword or the plough: regional dynamics in the romanisation of Belgic Gaul and Rhineland area. In From the sword to the plough: three studies on the earliest romanisation of northern Gaul. N. Roymans, ed. Pp. 9-103. Amsterdam: Amsterdam University Press.

Saxe, Arthur
1970 Social Dimensions of Mortuary Practice. Unpublished Dissertation, University of Michigan.

Shanks, M and C. Tilley
1982 Ideology, symbolic power, and ritual communication: A reinterpretation of Neolithic mortuary practices. In Symbolic and Structural Archaeology. I. Hodder, ed. Pp. 129-154. Cambridge: Cambridge University Press.

Shelach, G. and Y. Pines
2006 Change and Continuity in the State of Qin (770-221B.C.). In Archaeology of Asia. M. Stark, ed. Malden: Blackwell.

Shen, Ji et al.
2006 The Holocene vegetation history of Lake Erhai, Yunnan province southwestern China: the role of climate and human forcings. Holocene 16(2):265-276.

Silliman, S
2005 Culture contact or colonialism? Challenges in the archaeology of Native North American. American Antiquity 70(1):55-74.

Sima, Qian
1993 Shiji. 2 vols. B. Watson, transl. Volume 2. New York: Columbia University Press.

Sinopoli, C. M.
1994 Archaeology of Empires. Annual Review of Anthropology 23:159-180.

So, Jenny and Emma Bunker
1995 Traders and raiders on China's northern frontier. Seattle and London: Smithsonian Institution and University of Washington Press.

Spicer, E.

1962 Cycles of Conquest: The impact of Spain, Mexico, and the United States on the Indians of the Southwest, 1533-1960. Tucon: University of Arizona Press.

Stein, Gil

1998 World Systems Theory and Alternative Modes of Interaction in the Archaeology of Culture Contact. In James Cusick (ed .) Studies in Culture Contact: Interaction, Culture Change, and Archaeology. pp. 220-255. Carbondale, Southern Illinois University at Carbondale, Center for Archaeological Investigations

2002 From Passive Periphery to Active Agents: Emerging Perspectives in the Archaeology of Inter-Regional interaction (AAA Archaeology Division Distinguished Lecture in Archaeology) American Anthropologist 104:903-916

2005 Introduction: The Comparative Archaeology of Colonial Encounters. In Archaeology of Colonial Encounters. G. Stein, ed. Santa Fe: SAR Press.

Sun, Taichu and Xiong, Xi

1983 Chronology. In The Chinese Bronzes of Yunnan. J. Rawson, ed. Pp. 243-52. London: Sidgwick and Jackson and Cultural Relics Publishing House.

Tainter, Joseph

1978 Mortuary practices and the study of prehistoric social systems. In Advances in Archaeological Method and Theory. M. Schiffer, ed. Pp. 105-41, Vol. 1. New York: Academic Press.

1983 Woodland social change in the central Midwest: a review and evaluation of interpretative trends. North American Archaeologist 9:95-112.

Tang, Changshou 唐长寿

1993 Minjiang liuyu Han huaxiang yamu fenqi ji qi ta 岷江流域汉画像崖墓分期及其它. Zhongyuan Wenwu (2):47-52.

Thomas, N.

1992 Entangled Objects. Cambridge: Harvard University Press.

Urban, P and E. Schortman

1998 Culture Contact Structure and Process. In James Cusick (ed .) Studies in Culture Contact: Interaction, Culture Change, and Archaeology. pp. 102-24. Carbondale, Southern Illinois University at Carbondale, Center for Archaeological Investigations

Wagner, Donald

2001 The State and the Iron Industry in Han China. Copenhagen: NIAS Pub., Nordic Institute of Asian Studies.

Wallerstein, I.

1974 The Modern World-System. Volume 1. New York: Academic Press.

Wang, Dadao 王大道

1998 Yunnan Qujing Batatai gu muqun fajue jianbao 云南曲靖朱街八塔台古墓群发掘简报(A short report on the excavations at Batatai cemetery, Qujing, Yunnan). In Yunnan Kaogu wenji, Yunnan Provincial Institute of Cultural Relics and Archaeology (ed.), pp 357-377. Kunming: Yunnan Minzu Chuban she.

Wang, Mingke 王明珂

2003 Qiang zai Han Zang zhi jian : yi ge Huaxia bian yuan de li shi ren lei xue yan ji 羌在漢藏之間 ： 一個華夏邊緣的歷史人類學研究. Taibei: Lian jing chu ban shi ye gu fen you xian gong si.

Wang, Ningsheng 王宁生

1980 Yunnan Kaogu 云南考古. Kunming: Yunnan renming chuban she.

Wang, Zhongshu

1982 Han Civilization. K.C. Chang and Collaborators, transl. New Haven: Yale University Press.

Watson, William

1970 Dongson and the Kingdom of Tien. Readings on Asian Topics: Scandinavian Institute of Asian Studies Monograph Series 1: 45-71.

Webster, J.

2001 Creolizing the Roman Provinces. American Journal of Archaeology 105:209-25.

Weiner, Annette

1976 Women of Value, Men of Renown. Austin: University of Texas Press.

Wells, P.

1998 Culture contact, identity, and change in the European Provinces of the Roman Empire. In Studies in Culture Contact: Interaction, Culture Change, and Archaeology. J.G. Cusick, ed. Pp. 316-34. Carbondale: Center for Archaeological Investigations, SIU.

White, R.

1991 The middle ground: Indians, empires, and republics in the Great Lakes region, 1650- 1815. Cambridge: Cambridge University Press.

Whitmore, T.J. et al

1997 Water quality and sediment geochemistry in lakes of Yunnan province, southern China. Environmental Geology 32:45-55.

Wiessner, P.
1983 Style or Isochrestic Variation: A reply to Sackett. American Antiquity 50(1): 160-166
Wobst, M.
1977 Stylistic Behavior and Information Exchange. For the Director: Research Essays in Honor of James B. Griffin. C.E. Cleland, ed. Pp. 317-42. Anthropological Papers, Museum of Anthropology, University of Michigan 61. Ann Arbor: Museum of Anthropology, University of Michigan.

Yang, Bin
2005 Horses, Silver and Cowries: Yunnan in Global Perspective. Journal of World History 15(3):281-322.

Yang, Fan 杨帆
2004 Dian: the last Bronze Age Kingdom 古滇最后的青铜王国(Gu Dian, zuihou de qintong wangguo). Chinese National Geography 中国国家地理(Zhongguo guojia dili) 35(4):82-101.

Yao, Alice
2005 Scratching beneath iconographic and textual clues. Journal of Anthropological Archaeology 24:378-405.

You, Zhong 尤中
1994 云南民族史 Yunnan Minzu Shi (A History of Yunnan Minorities). Kunming: Yunnan Daxue Chuban she.

Yu, Ying-shih
1967 Trade and Expansion in Han China: A Study in the. Structure of Sino-Barbarian Economic Relations. Berkeley: University of California Press.

Yunnan Provincial Institute of Cultural Relics and Archaeology 云南省文物考古研究所 (Yunnan wenwu kaogu yanjiu suo)
2001 Qujing Qilin qu Luohanshan Shiyihao "Liangdui" mu fajue baogao 曲靖麒麟区罗汉山十一号梁堆墓发掘报告. (Report on No. 11 "liangdui" style burial from Luohanshan in Qilin area of Qujing Prefecture). Yunnan Wenwu 52(1):32-38.

2002 Qujing Batatai yu Hengdalu 曲靖八塔台与横大路(The sites of Batatai and Hendalu, Qujing). Beijing: Kexue Chuban she (Science Press).

2005 Kunming Yangfutou mudi 昆明羊甫头墓地(Kunming Yangfutou cemetery). Beijing: Kexue Chuban she (Science Press.

2006 Zhaotong Shuifu xian Loba yamu fajue baogao 昭通水富县楼坝崖墓发掘报告 (Report on the cliff shaft burials from Luoba in Shuifu county, Zhaotong). In Yunnan Kaogu Baogao ji 云南考古报告集(Collection of Archaeology Reports from Yunnan), Yunnan Provincial Institute of Cultural Relics and Archaeology, (ed.) pp. 106-33. Kunming: Yunnan Chuban jituan gongshi.

Yunnan Provincial Institute of Cultural Relics and Archaeology and Cultural Relics management office of Qilin, Qujing 云南省文物考古研究所, 曲靖市麒麟区文物管理所 (Yunnan sheng wenuwu kaogu yanjiu suo Qujing shi Qilin qu wenwu guanli suo)

2006 Qujing shi Qilin qu Xiaoxiang Pingpo mudi fajue baogao 曲靖市麒麟区萧乡平坡墓地发掘报告 (Report on the excavations of the Pingpo cemetery site in Qilin district of Qujing Prefecture). In Yunnan kaogu baogao ji 云南考古报告集(Volume of archaeology reports from Yunnan). Pp. 1-59, Vol. 2. Kunming: Yunnan chuban jituan gonshi, Yunnan keji chuban she.

Zhang, Bozhong 张泊忠

1989 Neimonggu kesuo zhongqi liujiazi xianbei muqun 内蒙古科左中旗六家子鲜卑墓群 (Chaoxian burial ground, Liujiaqi, Inner Mongolia. Kaogu (5):430-438.

Zhang, Zhenqi 张增祺

2001 Dian wenhua 滇文化(Dian Culture). Beijing: Wenwu Chuban she.

Zhao, Songqiao

1986 Physical Geography of China. New York: Wiley and sons.

Zhaotong city cultural management office 昭通市文管所 (Zhaotong shi wenguan suo)

1962 Yunnan Zhaotong Guijia yuanzi dong Han fajue 云南昭通桂家院子东汉墓发掘. Kaogu (8):395-399.